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Jupiter Data Analysis Program

February 29, 1980

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Space Science Notice

Jupiter Flies Closely Finger

February 26, 1980

NASA

National Aeronautics and
Space Administration

Washington, D.C.
20546

February 29, 1980

Reply to Attn of JDAP

Dear Colleague:

This letter is to call attention to a continuing opportunity to submit unsolicited proposals for participation in a new Jupiter Data Analysis Program (JDAP). It is recognized that the data that exist from the Voyager encounters with Jupiter constitute a national resource, and that it is necessary to conduct a program whereby Voyager and non-Voyager program scientists have an opportunity to analyze the data fully and to obtain additional or alternate interpretations of the data. Implementation of this program is contingent upon availability of funds.

The program includes laboratory experimentation; photointerpretation; theoretical, analytical, field, and comparative studies; and cartographic compilation.

SCOPE

This letter is primarily directed towards, but not limited to, analysis of data obtained by the Voyager spacecraft encounter with Jupiter. However, available within the scope of this program are data obtained during Voyager cruise and Jupiter data acquired by Pioneers 10 and 11.

DURATION OF PROGRAM

The Jupiter Data Analysis Program is a planned three-year program, to begin in FY'81 (Oct 1, 1980). It is expected that there will be a letter update if there are changes in the announced objectives or scope of this program during this three-year period.

PROPOSALS

Acceptance of unsolicited U.S. proposals (and of non-U.S. proposals) will be made by the Planetary Division. We will take into account the overall scientific and technical merit of the proposed effort; the unique capabilities, experience or techniques which the investigator possesses and offers; and such other factors as are pertinent and contribute to the program objectives.

The Jupiter Data Analysis Program is an open program in which unsolicited proposals may be submitted at any time. However, it is contemplated that proposals will be reviewed, by a scientific peer group, on a periodic basis. Thus, to receive funding commencing early in FY'81, proposals should be received at NASA as soon as practical but not later than the end of May 1980. Proposers who submit by the end of May 1980 can expect notification of results of the proposal review during September 1980. Proposals received after the end of May 1980 will be held for a later review cycle.

Guidelines for submittal of proposals are contained in Attachment II, Section II. To be considered, non-U.S. proposals require endorsement and financial support from a foreign agency. Additional instructions for submittal of non-U.S. proposals are contained in Attachment II, Section IV.

Although proposals may be submitted covering any period of performance, the normal period of funding will be about one year. Extension beyond that period of performance contemplated by an initial award will generally be subject to the availability of funds, the proposal's relevance to NASA's programs, and a demonstration of satisfactory progress on prior effort.

VOYAGER

Two Voyager spacecraft were launched toward Jupiter and Saturn along complementary trajectories in August and September 1977. The closest approach dates at Jupiter were March 5, 1979 for Voyager 1 and July 9, 1979 for Voyager 2. During the 100 plus days of each encounter period, a substantial volume of data was acquired in each of the principal investigation domains: the planet Jupiter itself, the satellites, and the Jovian magnetosphere. Important data were obtained on the interactions among these domains.

An overall mission description and detailed discussion of each of the eleven instrument-related investigations can be found in the Space Science Review* (1977) collection of papers. Science* (1979) and Nature* (1979) contain the preliminary science results which form the basis for subsequent analysis and study. In addition, there are data available in the field-and-particle domain for the Earth-to-Jupiter cruise phase.

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*Specific references are included in Attachment I.

The table below briefly lists the investigations and their objectives. The Space Science Review collection provides substantially more details.

VOYAGER SCIENCE INVESTIGATIONS

Table 1. Scientific investigations for the Voyager Mission.

Investigation*	Abbreviation	Typical Jovian encounter objectives
Imaging science (B. A. Smith)	ISS	High-resolution reconnaissance over large phase angles: atmospheric dynamics: geologic structure of satellites
Infrared radiation (R. A. Hanel)	IRIS	Atmospheric composition, thermal structure, and dynamics: satellite surface composition and thermal properties
Photopolarimetry (C. W. Hord)	PPS	Atmospheric aerosols: satellite surface texture and sodium cloud
Radio Science (V. R. Eshleman)	RSS	Atmospheric and ionospheric structure, constituents, and dynamics
Ultraviolet spectroscopy (A. L. Broadfoot)	UVS	Upper atmospheric composition and structure: auroral processes: distribution of ions and neutral atoms in the Jovian system
Magnetic fields (N. F. Ness)	MAG	Planetary magnetic field: magnetospheric structure: Io flux tube currents
Plasma particles (H. S. Bridge)	PLS	Magnetospheric ion and electron distribution: solar wind interaction with Jupiter: ions from satellites
Plasma waves (F. L. Scarf)	PWS	Plasma electron densities: wave-particle interactions: low-frequency wave emissions
Planetary radio astronomy (J. W. Warwick)	PRA	Polarization and spectra of radio frequency emissions: Io radio modulation process: plasma densities
Low-energy charged particles (S. M. Krimigis)	LECP	Distribution, composition, and flow of energetic ions and electrons: satellite-energetic particle interactions
Cosmic ray particles (R. E. Vogt)	CRS	Distribution, composition, and flow of high-energy trapped nuclei, energetic electron spectra

*The Principal Investigator or Team Leader is indicated in parentheses.

VOYAGER DATA

A complete list of reports and publications generated by the Voyager Project and by the Voyager Principal Investigators and Team Leaders is given in Attachment I.

Prior to October 1, 1980 additional information concerning variety, format and content, and cost of acquiring the data can be obtained by contacting Mr. Robert Steinbacher at the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, California 91103; telephone number (213) 354-5076 or FTS 792-5076. After October 1, 1980 all inquiries and requests should be sent to the National Space Science Data Center (NSSDC), Code 601, NASA/Goddard Space Flight Center, Greenbelt, MD 20771.

PROGRAM MANAGEMENT

The Jupiter Data Analysis Program is managed by the Planetary Division, Code SL-4, NASA Headquarters, Washington, DC 20546. Dr. M. A. Mitz (202/755-3780) is designated as Program Scientist.

Questions regarding proposal format, evaluation procedures, etc. should be referred to one of the following NASA Discipline Scientists by telephone or as a written request to NASA Headquarters, Code SL-4, Washington, DC 20546; attn. Dr. M. A. Mitz.

DISCIPLINE	SCIENTIST	TELEPHONE
Atmospheres	Dr. Robert E. Murphy	202/755-3660
Geology, Cartography and Image Processing	Mr. Joseph M. Boyce	202/755-3645
Geochemistry and Geophysics	Dr. William L. Quaide	202/755-1602
Plasma Physics	Dr. Erwin R. Schmerling	202/755-3685

Sincerely,

Thomas A. Mutch
Associate Administrator
for Space Science

Enclosures

READEX MICRO

VOYAGER PROJECT AND SCIENTIFIC REPORTS AND PUBLICATIONS

GENERAL

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GUIDELINES FOR PARTICIPATION IN NASA'S JUPITER DATA ANALYSIS PROGRAM

I. Purpose

These guidelines contain format and mailing information for submission of unsolicited proposals for research related to the Jupiter Data Analysis Program. Although utilization of this proposal format is not required, it is believed that its use should simplify preparation and review of your proposal. Further, the guidelines are consistent with NASA's "A Guide to Policies and Procedures for Sponsored Research" (NHB 5100.3, available from the University Affairs Office, Code LU-16, NASA Headquarters, Washington, DC 20546).

II. Proposal Content and Format

The content of the proposal should be in sufficient detail to enable a reviewer to make a judgment with respect to: (1) the relevance of the proposed research to the Jupiter Data Analysis Program, (2) the probability that the investigators will be able to accomplish the stated objectives within the requested resources, and (3) its overall merit.

a. Number and Size - Fifteen copies of each proposal and any appended material are required.

It will be helpful if each proposal is limited to not more than 15 single-spaced, typewritten pages. Any other pertinent information, such as publications, etc., may be included as attachments. It is suggested that the following material, assembled in the order given, be submitted if appropriate:

b. Proposal Submission Address (U.S. proposals only; see Section IV for non-U.S. proposals) - The external mailing label and the cover letter must read exactly as follows:

Dr. M. A. Mitz
National Aeronautics and Space Administration
Code SL-4 (JDAP)
Washington, D.C. 20546

c. Cover Letter - Each proposal should be prefaced by a cover letter signed by an official authorized to commit the investigator's organization. The cover letter should refer to the Jupiter Data Analysis Program.

d. Title Page - The title page should contain the following:

1. A short descriptive title for the proposed investigation.

2. Name of the proposing organization(s).

3. Names, full addresses, telephone numbers, and affiliations of the principal investigator and all co-investigators.

4. Date of submission.

5. A brief statement regarding special needs or facilities.

6. Identification of pertinent discipline(s). (Atmosphere, geology, geophysics, geochemistry, plasma physics, etc.)

e. Abstract Page - A brief statement of the objective of the proposed research, method of approach, and justification of the work.

f. Description of Proposed Research - A brief introduction, background, and justification should be included. The description should be a full statement of the research proposed, identifying and relating the key elements. Give attention to the nature and amount of experimental data needed and how it is to be acquired. Describe the methods or approaches to be used; as appropriate, discuss the advantages of the proposed approach over alternatives. Discuss the significance of the expected results. If the proposed research covers more than a year of effort, milestones and intermediate results should be identified and associated with a schedule.

g. Cost Plan (U.S. Proposals Only) - Separate budgets should be presented for each year. The proposal should be prepared according to the guidelines of the institution submitting the proposal and should include the following information:

1. Cost estimates for direct labor, including individual man-months and rates for the personnel involved.

2. Estimated costs for materials; itemize items over $1,000.

3. Travel Costs: itemize trips.

4. Overhead rates and costs.

5. Other costs, with explanation. (Include cost of data products. See Section II-i of this Attachment)

6. Total cost of support being requested from NASA.

h. Attachments - Appropriate descriptions of available facilities, bibliographies, and such other materials as desired.

i. Data Requirements - It will be the responsibility of the investigator to acquire required data. A data acquisition plan should be provided in the proposal.

j. Other support - List, by title, other NASA-funded studies from which you receive support. Include the name of the NASA monitor, current funding level and a short description of the work.

k. Disclosure of Proposal Data - It is NASA's policy to use the technical data contained in proposals for evaluation purposes only. Where any of such technical data constitutes a trade secret under the law, and the offeror (or his proposed subcontractor) desires to maintain trade secret rights in such technical data, the following "Notice" must be affixed to the cover sheet of the proposal specifying therein the pages of the proposal which contain trade secrets to be restricted in accordance with the conditions of the "Notice." Thereafter, it is NASA policy to protect such noticed technical data as a trade secret. NASA assumes no liability for use or disclosure of any technical data to which the "Notice" has not been applied.

NOTICE

Data on pages of this proposal constitute a trade secret. It is furnished to the government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract is awarded on this proposal, the government may obtain in the contract additional rights to use and disclose this data.

III. General Policy

All documents submitted as unsolicited proposals should meet the following criteria:

A. contain sufficient scientific, technical, and cost information to enable meaningful evaluation;

B. has been approved by a responsible official of the originating or sponsoring organization, or a person authorized to contractually obligate such an organization; and

C. does not merely offer to perform standard services or to provide "off-the-shelf" articles.

If the document does not meet these requirements, a comprehensive evaluation will not be made, and the document will be considered and handled as correspondence.

IV. Proposals from non-U.S. Organizations:

Proposals from non-U.S. proposers should be prepared following the guidelines for content and format given in Section II above, excluding cost plans. Sixteen (16) copies of the proposals should be forwarded to the following address:

International Affairs Division
Code LID-18 (JDAP)
National Aeronautics and Space Administration
Washington, DC 20546

Proposals should be in English and should be endorsed by the official national agency of the proposer's country which is responsible for space and/or scientific activities. Should a proposal be selected, NASA will arrange with the sponsoring national agency for the proposed participation on a cooperative (no exchange of funds) basis, in which NASA and the foreign sponsoring agency will each bear the cost of discharging their respective responsibilities, including travel and subsistence of personnel and transportation of equipment.

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PIONEER VENUS GUEST INVESTIGATOR PROGRAM

March 24, 1980

NAS 1.53/2:

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Space Science Notice

National Aeronautics and
Space Administration

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20546

Reply to Attn of: SL-4

Dear Colleague:

This letter is to announce the establishment of a Guest Investigator program for the analysis of Pioneer Venus (PV) measurements. As you know, the PV Orbiter began operation at Venus on December 4, 1978, and the four Pioneer Venus probes and their bus entered Venus' atmosphere on December 9, 1978. A great number of both direct measurements and remote observations have been performed. We anticipate that data acquisition from the orbiter will continue through 1981 and perhaps beyond. The goals of the mission include the study of the atmosphere and ionosphere as well as surface characteristics of the planet. An enclosure (1) describes the mission and the instrumentation employed. Further information is available in two special issues of Space Science Reviews of May and June 1977 (Vol. 20). A current bibliography of PV publications is provided in enclosure 2. Many of the papers can be found in Science, 203 (Feb. 23, 1979) and Science, 205 (July 6, 1979).

If you or your colleagues are interested in participating in the PV Guest Investigator program, you may wish to submit an unsolicited proposal describing your planned investigation. Proposals should be for clearly defined investigations of limited scope. It is anticipated that NASA support would not exceed $25,000 for any one award. Because of the very limited data sets for the bus and probes, most of the awards will be for orbiter related studies. Studies representing a significant extension of the investigator's current research which would benefit from his access to specific PV data are particularly encouraged. Such current research might include studies of Venus or, through comparative planetology, the other planets including Earth.

Access to the required data will be normally provided through one of the PV Investigators who is familiar with the available data and knows how to acquire and assemble

the particular data required for an investigation. Guest Investigators will be expected to participate in the quarterly meetings of the Science Steering Group. In order to assure timely implementation of the program, it is suggested that: 1) proposals be limited to ten pages, excluding attachments, and include a one page summary of the proposed research and budget requirements using the enclosed Form T43; 2) proposals be submitted by the latter part of April 1980 to be considered in the initial review and selection. We anticipate that review and initial selection will be completed by May so that funding can begin as soon as possible. The investigations should normally be completed in no more than one year. Additional efforts will be initiated, and some first year efforts may be continued in FY 81. Proposals should be submitted to:

Dr. Robert E. Murphy
Code SL-4, Program Scientist, Pioneer Venus
NASA Headquarters
Washington, DC 20546

Questions should be directed to Dr. Murphy by calling (202) 755-3660.

Sincerely,

Thomas A. Mutch
Associate Administrator for
Space Science

Enclosures:

1. Description of PV mission and orbiter instruments
2. PV Bibliography
3. Form T43
4. Proposal Content and Format for Pioneer Venus Guest Investigators

ENCLOSURE 1

Pioneer Venus Mission Description

The Pioneer Venus Mission is carried out by an orbiting spacecraft with 12 experiments, a probe bus with two experiments and four entry probes with a total of 10 experiments. The orbiter was placed into an elliptical orbit on December 4, 1978, and the probes and bus entered the atmosphere on December 9, 1978. The nominal orbit parameters are:

Periapsis	150-260 km
Apoapsis	66,614 km
Orbital Period	24 hours
Orbital Inclination	105° ref. to ecliptic
Nominal Mission	243 days - 1 Venusian Sidereal Day

The probe entry parameters were:

Probe	Latitude	Longitude
Large Probe	4°.0	304°.0
Small Probe 1	60.1	4.4
Small Probe 2	-32.4	318.4
Small Probe 3	-27.4	56.7
Bus	-41.2	284.1

The experiments and principal investigators are listed below; further details are given in the appendix.

Orbiter Instruments	PI/Inst
Neutral Mass Spectrometer/ONMS	H. Niemann/GSFC
Ion Mass Spectrometer/OIMS	H. Taylor/GSFC
Retarding Potential Analyzer/ORPA	W. Knudsen/LMSC
Electron Temperature Probe/OETP	L. Brace/GSFC

Ultraviolet Spectrometer/OUVS	A. Stewart/Colo
Solar Wind Plasma Analyzer/OPA	J. Wolfe/ARC
Magnetometer/OMAG	C. Russell/UCLA
Infrared Radiometer/OIR	F. Taylor/JPL
Cloud Photopolarimeter/ Imager/OCPP	L. Travis/GISS
Radar Altimeter/ORAD	G. Pettingill/MIT
Electric Field Detector/OEFD	F. Scarf/TRW
Gamma Burst Detector/OGBD	W. Evans/LASL

Probe & Bus Instruments	PI/Inst.
Large Probe Neutral Mass Spectrometer/LNMS	J. Hoffman/UTD
Large Probe Gas Chromatograph/LGC	V. Oyama/ARC
Large Probe Atmosphere Structure/LAS	A. Seiff/ARC
Large Probe Radiometer LSFR	M. Tomasko/Ariz.
Large Probe Infrared Radiometer/LIR	R. Boese/ARC
Large Probe Cloud Particle Size Spectrometer/LCPS	R. Knollenberg/PMS
Large Probe Nephelometer/LN	B. Ragent/ARC
Small Probe Amtosphere Structure/SAS	A. Seiff/ARC B. Ragent/ARC &
Small Probe Nephelometer/SN	J. Blamont/CNES
Small Probe Net Flux Radiometer/SNFR	V. Suomi/WISC.

Probe and Bus Instruments	PI/Inst.
Bus Neutral Mass Spectrometer/BNMS	U. von Zahn/Bonn
Bus Ion Mass Spectrometer/BIMS	H. Taylor/GSFC

All experiments except the Infrared Radiometer are currently in working order.

EXTENDED MISSION

At the conclusion of the Nominal Mission (NM) on August 4, 1979, the first of up to three extended mission (EM) phases was begun. The current plans for the extended missions include EM1 which ends on Day 487 (April 3, 1980) and EM2 which ends on Day 730 (December 2, 1980). At the current rate usage, propellant will run out around Day 750, but the actual time will probably be somewhat earlier because of inefficiency at low tank pressure. It is planned to stop controlling periapsis before all the fuel is gone so that attitude control can be maintained for several additional years. Periapsis will then rise about 500 km per Venus sidereal day, or 730 km per Earth year. The spin rate is to be raised to 15 rpm to enhance the value of the plasma experiments. The spinup is planned for Day 675 and the termination of orbit adjustments for Day 690. This plan is to be reassessed on Day 500. A summary of events is given in Fig. 1 (the symbols MT and ET under aeronomy give the times when periapsis crosses the morning and evening terminators).

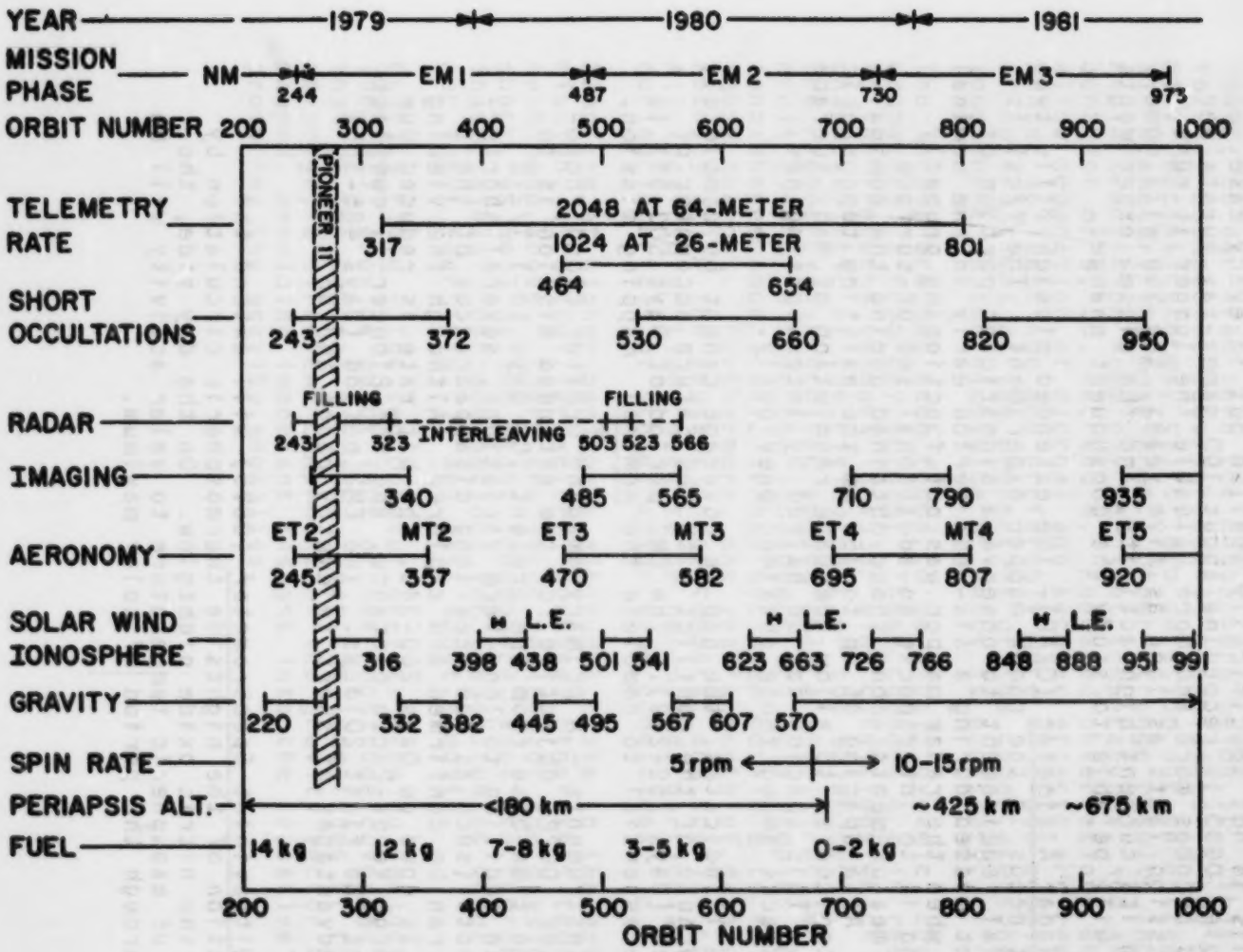

Figure 1. Proposed timeline for PV extended missions (EM). ET, MT: evening, morning terminator crossings at periapse. L.E.: long eclipses.

Figure 1

Science Operations

The following sections outline, in a general manner, the plans for science operations during the extended mission. Nearly all experiments will benefit from an extended data base, even though this is not specifically spelled out in every case. For example, OGBD is recording about 100 gamma-ray bursts per year, and becomes more and more valuable the longer it runs. If the mission lasts as long as five years, the Sun will come down from its current high activity, and the plasma experiments and OUVS will be able to study the consequent changes.

Orbiter Radar Altimeter (ORAD)- The extended mission fills two important needs in the radar mapper experiment. The first is the crucial requirement to observe a significant portion of the planet missed during a six-week period early in the nominal mission when the radar mapper was not functioning properly. The second is to intersperse an additional set of surface altitude measurements among those obtained during the nominal mission. At a spacing of up to 150 km the existing topographic grid is too coarse to allow adequate resolution of many surface features. This spacing can be halved by interspersing new surface tracks among those obtained previously.

As Figure 1 indicates, the gap in coverage cannot be completely filled because of the conflict with the Saturn encounter of Pioneer 11 (Days 259-279). The EM2 period of Days 503-521 is therefore essential to complete the nominal mapping mission.

Optical Instruments - A primary imaging Orbiter Cloud Photopolarimeter (OCPP) objective for the extended mission is to extend the time-base from the present 100 days to 1 1/2-2 years. In addition to long-term variations, several shorter-term effects (such as the week-long disappearances of the Y feature) can be confirmed and explored. Although the viewing geometry is good on Days 260-340, the bit rate is reduced due to the large Venus-Earth distance, and the Pioneer 11 conflict eliminates the first 20 days. The EM2 period (Days 485-565) has the advantages of short telemetry range and no such conflict.

Orbiter Ultraviolet Spectrometer (OUVS) will extend the investigation of the nightside thermospheric circulation by means of the nitric oxide nightglow. On the day side, the response of exospheric temperature to solar activity will be traced through the period of solar maximum.

OCPP coverage is not affected at all by a rise of periapsis, and many of the OUVS functions can also continue well into EM3.

Aeronomy and Solar Wind - A major discovery of the Pioneer Venus mission is that the nightside thermosphere is as cold as 100°K, colder even than the mesosphere below it. This totally unexpected behavior, still unexplained in any but the most heuristic terms, calls into question our understanding of all planetary thermospheres. Other strange results include a rapid transition from day to night temperatures, and anomalous behavior of O, CO, He, and H. Repeated observations which allow separation of diurnal and secular effects are required. Hence, at least one and preferably more than one complete set of observations of the properties of the upper atmosphere and ionosphere on the nightside of Venus is necessary.

The ionosphere has been found to be highly dynamic, changing dramatically from day to day. These changes are in response to the frequent changes in solar wind conditions which are characteristic of the rising part of the solar cycle. Since the Pioneer Venus Orbiter spends only a small fraction of its orbit ($\sim$1%) within the ionosphere and only samples the ionospheres once a day, it has not been possible to follow these changes. Furthermore, one year's worth of data does not readily allow the separation of temporal and spatial changes. All local solar times need to be resampled, particularly during intervals of steady solar wind conditions.

Sampling at higher periapsis altitudes, late in the extended mission, is useful for several purposes other than those mentioned above. There are large regions of the dayside bow shock, as well as the night ionosphere, that are currently inaccessible. Optimum periods for these studies occur twice per Venus year (Fig. 1) and last about a month.

Gravity Field - The two Doppler gravity mapping periods in 1980 will provide about 150° of new longitude coverage over that of the nominal mission. Over the longitudes of redundant coverage, a different component of the gravity vector will be mapped, providing important insight into the causative masses producing the gravity anomalies.

B. Description of Proposed Research - A brief introduction, background, and justification should be included. The description should be a full statement of the research proposed, identifying and relating the key elements to the Pioneer Venus mission. You should explain in detail the data or observational requirements to support your participation in a particular category.

Selected proposals can be supported for only one year or less; and commitments by NASA for Pioneer Venus guest investigator support beyond one year cannot be made. When it is expected that work will require more than one year to complete, a brief description of the entire effort should be included.

C. Cost Plan - Prepared according to the guidelines of the institution submitting the proposal and including:

1. Cost estimates for direct labor, including individual man-months and rates for the personnel involved.

2. Estimated costs for computer service, including type of computer and number of hours, equipment and materials. Itemized items over $1,000.

3. Travel costs: Itemized trips.

4. Overhead rates and costs.

5. Other costs, with explanation.

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DO NOT FILL IN SHADED AREAS

Enclosure 3

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
RESEARCH AND TECHNOLOGY RESUME

1. DATE PREPARED

2. TITLE

3. NUMBER/CODE
a. PROPOSAL | b. CURRENT

4. PERFORMING ORGANIZATION

5. CONTRACT/GRANT NO.

6. DATE
a. STARTING | b. ANNIVERSARY

7. INVESTIGATOR'S NAME | TEL. NO.

8. NASA ALT. TECH. MONITOR'S NAME | TEL. NO.

9. INSTITUTION CATEGORY CODE

FISCAL YEAR	STATUS a.	MANPOWER (MY) IN-HOUSE b.	MANPOWER (MY) S/C c.	FUNDING (In K) IMS d.	FUNDING (In K) R/D e.	FUNDING (In K) TOTAL f.
10. PRIOR	79					
11. CURRENT	80					
12. BUDGET	81					

13. DESCRIPTION *(a. Brief statement on strategy of investigation; b. Progress and accomplishments of prior year; c. What will be accomplished this year, as well as how and why; and d. Summary bibliography)*

TECHNICAL MONITOR	TYPED NAME AND SIGNATURE	DATE
APPROVING OFFICIAL	TYPED NAME AND SIGNATURE	DATE

NASA FORM T43 DEC 74 REPLACES NASA FORM T8 WHICH IS OBSOLETE.

INSTRUCTIONS

1. DATE PREPARED. – Self-explanatory.

2. TITLE. – Self-explanatory.

3. NUMBER/CODE. – a. Enter proposal number if research is conducted out of NASA; b. Enter 11-digit code for this task. The first five digits equate to the RTOP number under which this work is being performed.

4. PERFORMING ORGANIZATION. – Enter institution name, city and State, including ZIP Code.

5. CONTRACT/GRANT NO. – Enter the contract or grant number, including Arabic prefix.

6. DATE. – a. Enter month and year this work was initiated; b. Enter month and year the present contract or grant expires.

7. INVESTIGATOR'S NAME. – Enter name and two initials and the telephone number. Specific titles; e.g., Dr., Prof., etc., are not to be used.

8. NASA ALTERNATE TECHNICAL MONITOR. – Enter name and two initials, without title, and telephone number.

9. INSTITUTION CATEGORY AND CODE. – Enter institutional category code where research is being performed; e.g., UN = University, UM = University Medical School; NP = Nonprofit; IN = Industrial; FC = Field Center, and OT = Other Government.

10-12. PRIOR, CURRENT, BUDGET. – Complete each of these line items *(Prior 75; Current 76, and Budget)* to show the following FY 1976 information:

a. Status. – Enter status of research during each particular year; e.g., C = Continuing research; N = New; and F = Completed.

MANPOWER *(MY)*. – Enter manpower equipment to one-tenth of a man year for each year for:

b. In-house. – In-house Civil Service.

c. S/C. – Support Contractor.

FUNDING. – Enter all funding data in thousands for the following:

d. IMS. – Institutional Management System.

e. R/D. – Research and Development.

f. Total. – The sum of columns d and e for each of the Prior, Current and Budget FY's.

13. DESCRIPTION. – Brief statement including the justification and progress as to this particular task and the necessity for supporting this work. Material in this section should not duplicate justification, and so forth, in the RTOP. Paragraphs should be numbered a through d as outlined.

14. TECHNICAL MONITOR. – Enter last name, two initials and signature of NASA Technical Monitor and the date.

15. APPROVING OFFICIAL. – Enter last name, two initials, signature and date.

ENCLOSURE 4

PROPOSAL CONTENT AND FORMAT FOR PIONEER VENUS GUEST INVESTIGATORS

General information may be found in NASA's, "A Guide to Policies and Procedures for Sponsored Research," NHB 5100.3, available from the Office of University Affairs, Code LU-16, National Aeronautics and Space Administration, Washington, D.C. 20546.

The content of the proposal should be in sufficient detail so that a reviewer can make a judgment with respect to: (1) the relevance of the proposed research to the Guest Investigator Program, and to the objectives of the Pioneer Venus mission; (2) the probability that the investigators will be able to accomplish the stated objectives within the requested resources; and (3) its overall value to this program, as compared to that of other proposals.

It will be helpful if each proposal is limited to not more than ten single-spaced, typewritten pages (any other pertinent information, such as publications, data, etc., may be included as attachments), and contains at least the following material assembled in the order given:

A. Title Page - The title page should contain the following:

1. A short descriptive title for the proposed investigation. The title should refer to the Pioneer Venus Guest Investigator Program.

2. Name of the proposing organization(s).

3. Names, full addresses, telephone numbers, and affiliations of the Principal Investigator and all Co-Investigators.

4. Date of submission.

5. Signatures. Each proposal must be signed by an official of the investigator's organization, who is authorized to commit the organization to the proposal and its contents.

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May 21, 1980

NAS 1.53/2:

NASA

National Aeronautics and
Space Administration

Washington, D.C.
20546

21 May 1980

Reply to Attn of SL-4 (PGR)

Dear Colleague:

This letter calls your attention to the continuing opportunities for participation in certain areas of planetary science research. Specific areas discussed in this letter are the Planetary Geology, Planetary Geophysics and Geochemistry, and Planetary Materials programs.

Substantial changes have been made in the Planetary Division in recent years, and careful attention should be given to the enclosed Guidelines. The formerly separate programs of Lunar Data Analysis and Synthesis, Lunar Supporting Research and Technology, Meteorite Research, Lunar Sample Research, Planetary Geology Supporting Research and Technology, and Planetary Geology Data Analysis have now been completely integrated into three discipline oriented programs. They are: Planetary Geology Research and Analysis (Joseph M. Boyce, Discipline Scientist); Planetary Geophysics and Geochemistry Research and Analysis (William L. Quaide, Discipline Scientist); and Planetary Materials Research (Bevan M. French, Discipline Scientist).

I am confident that these changes have strengthened the NASA effort in exploring the solar system. At the same time, they have simplified the management interfaces between NASA and the scientific community. Moreover, the changes effected should simplify your activity in preparing proposals, especially with regard to understanding the areas of responsibility of each program office.

To ease the burden of proposal preparation and review, we are continuing this year to provide for multi-year review of some proposals. Although awards are normally for periods of performance that do not exceed twelve months, a significant number of proposed efforts are of such contemplated duration and high quality that an annual review of a full technical proposal is unnecessary. In such cases, and with the approval of the Discipline Scientist, such proposers may elect to rely on the program's scientific/technical evaluation of the

original full technical proposal, supplemented by updated cost information and with progress reports of the first or second year's effort to determine whether to extend the award for a second or third year. I believe that this "continuing award" technique will free many researchers from the yearly effort of preparing a completely detailed proposal and will thus permit them to devote more time to scientific work. This matter is discussed further in the enclosed Guidelines.

NASA has recently carried out an extensive review of its lunar sample research activities, in cooperation with the National Science Foundation (NSF). As a result of this review, both agencies have agreed to consider lunar sample proposals in FY 1981. NASA is particularly interested in proposals for lunar sample research projects that closely support its goals of exploring the solar system, determining its nature, origin, and history, and developing techniques for future exploration. NSF will consider projects that increase scientific knowledge in the earth and planetary sciences. Specific proposals should be sent directly to the appropriate agency, as proposals are not normally interchanged.

We feel that these FY 1981 plans will insure that NASA can continue lunar sample projects that contribute directly to its goals and missions, and we also look forward to cooperating with NSF in the future support of lunar sample research. More information about the support of lunar sample research is contained in the attached Guidelines.

NASA continues to encourage educators to make use of the latest information available from planetary research. Secondary school teachers in particular should note the availability of the new Lunar Sample Educational Package for use in their classrooms. Procedures for obtaining lunar samples or other materials such as experiment data and planetary photography for use in the classroom are discussed in Section VIII of the enclosed Guidelines.

The consolidation of these programs and the steps designed to ease the burden of proposal preparation are intended to make program management more efficient and to make it possible for participants in the programs to make the most effective use of their research time. We will continue our efforts toward those ends, and suggestions from the scientific community are most

welcome. The enclosed Guidelines should clarify the procedures and schedule for submission of proposals. Although utilization of these Guidelines is not required in preparing a proposal, their use should simplify both preparation and review of your proposals and will thus facilitate prompt notification of the results.

Sincerely,

Thomas A. Mutch
Associate Administrator
for Space Science

Enclosure

21 May 1980

ENCLOSURE

GUIDELINES FOR PARTICIPATION IN

The PLANETARY GEOLOGY PROGRAM

THE PLANETARY GEOPHYSICS AND GEOCHEMISTRY PROGRAM

THE PLANETARY MATERIALS PROGRAM

21 May 1980

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MODEL FORMATS

I. PURPOSE

These Guidelines provide procedural and format information for submission of unsolicited proposals for research in the areas of Planetary Geology, Planetary Geophysics and Geochemistry, and Planetary Materials. These research areas are elements of a broadly based program of planetary research that is managed by NASA's Planetary Division.

II. SCOPE OF THE PROGRAM

Programs discussed in this notice now include activities that were formerly distributed among separate lunar and planetary programs. The merger of lunar and planetary program offices and rearrangement of their elements into discipline-oriented programs has strengthened NASA's effort in exploring the solar system and has simplified the management interface between NASA and the scientific community.

The Planetary Geology Program (Joseph M. Boyce, Discipline Scientist) supports scientific investigations which contribute to understanding the geological evolution of the planets, their satellites (including Earth's Moon) and such smaller solar system bodies as asteroids. These investigations involve several types of research efforts: generation of new, basic data; analysis and synthesis of existing data; or combinations of both kinds of activities. The goals of this program are to foster the gathering, synthesis and comparative study of data that will improve the understanding of planetary geological processes, their extent, and the results of their interactions through time. Examples of the kinds of research supported by this program include: laboratory and earth analog studies of aeolian and fluvial erosion; analog studies of volcanic, tectonic and meteorite impact features and processes; and photogeologic studies of planetary surface processes (e.g., lava flooding, cratering, aeolian mechanisms and structural deformation) and their history.

Planetary cartography and geologic mapping are also supported by this program, but proposals for these activities are not reviewed under the Guidelines described in this notice. Information regarding

procedures for submitting proposals for these kinds of activities may be obtained from the Discipline Scientist, Planetary Geology Program (address and telephone number in Section VII.E.).

The Planetary Geophysics and Geochemistry program (William L. Quaide, Discipline Scientist) supports scientific investigations which enhance the understanding of the geochemical and geophysical nature of the Moon, planets, other satellites and small bodies of the solar system, and studies concerned with the formation and chemical and physical development of the solar system. These investigations may involve research efforts which contribute new data, which analyze and synthesize existing data, or which combine both kinds of activities. The goals of this program are to increase the understanding of the origin of the solar system and the processes by which its planets and small bodies have evolved to their present physical and chemical states. Examples of the kinds of research supported by this program include: theoretical studies of solar system formation; modelling studies of the thermal history, convective processes, dynamical history and chemical differentiation of planetary bodies; laboratory studies of cratering, shock metamorphism, phase stability, thermal emission, chemical partitioning, and other processes necessary to interpret planetary data; and syntheses of previously obtained geochemical and geophysical data in order to improve our understanding of the present status of the planetary bodies and the processes which have given rise to their present conditions.

The Planetary Materials program (Bevan M. French, Discipline Scientist) supports laboratory studies of a variety of extraterrestrial materials; lunar samples, meteorites, and interplanetary dust. These investigations involve direct measurement of such physical and chemical properties as mineral composition, major and trace element chemistry, radiometric ages, magnetism, compressional and thermal properties, spectral reflectance, and radiation exposure effects. The goal of this program is to support research projects that yield direct information about the formation of the solar system, the exact time scales for planetary formation and

history, the nature and development of planetary surfaces, and the past activity of the Sun and cosmic rays. These studies also provide "ground truth" for analyzing other planetary surfaces with earth-based or spacecraft-based remote sensing techniques.

Lunar Sample Research. As a result of actions taken by Congress in FY 1978, NASA has undertaken, in cooperation with the National Science Foundation (NSF) an extensive review of the status of lunar sample research supported by the Planetary Materials program. As a result of this review, both NASA and NSF will consider proposals for lunar sample research in FY 1981.

NASA is particularly interested in proposals for lunar sample research projects that closely support its activities of exploring the solar system, determining its nature, origin, and history, and developing techniques for further exploration. In general, NASA-supported lunar sample research will include the following topics: highland petrology, regolith studies, carbon and light elements, exposure ages and radiation effects, magnetic properties, physical and mechanical properties, optical properties, craters and microcraters, and surface and space environment effects. NSF will consider a wider range of proposals that contribute to the development of new knowledge in the areas of planetary science and related fields.

All foreign proposals for lunar sample studies will be evaluated and supported by NASA and not by NSF, regardless of specialty. They should be submitted according to Guidelines contained in this Notice.

Scientists whose lunar sample studies are now being supported by NSF should consider submitting their proposals for continued support in FY 1981 to NSF. Scientists now being supported by NASA should consider submitting their proposals for continued support to NASA in accordance with these Guidelines. New proposals may be submitted to either agency as appropriate, depending on the nature of the research proposed. The same proposal may be submitted to both NASA and NSF if desired; however, such proposals should clearly state that they are being submitted to both agencies. The responsibility for security of, and access to, the

lunar sample collection remains with the NASA Johnson Space Center. NASA and NSF have established procedures to insure that principal investigators (PIs) funded by NSF can obtain the necessary access to lunar samples. It is anticipated that the procedures for access to lunar samples for PIs funded by NSF will be the same as for NASA-funded PIs; in particular, the Sample Security Plan (see Section V.E.) will still be required of all PIs regardless of whether they are funded by NASA or not.

PIs who wish more information about future support of lunar sample research by NASA or NSF, or about submitting proposals to either agency, should contact the individuals listed below:

Discipline Scientist, Planetary Materials
Planetary Division (Code SL-4)
NASA Headquarters
Washington, DC 20546
Phone (202) 755-3760 FTS 755-3760

Program Director, Geochemistry
Division of Earth Sciences
National Science Foundation
1800 G Street, N.W.
Washington, DC 20550
Phone (202) 632-4213 FTS 632-4213

NASA expects to support the best investigations in all of the above disciplines, subject to the constraints of available funds, the need to maintain programmatic balance, and the availability of sample materials. Innovative proposals for problem-oriented research in the areas described are encouraged, both from scientists who have previously participated in such programs and from scientists who have not. Because of the complex nature of many planetary problems, proposals from consortia of scientists having different disciplinary backgrounds are also encouraged where appropriate.

An important goal of the Planetary Division, in addition to research, is to facilitate access to data and lunar sample material for certain scientific and educational purposes not involving a NASA-supported research project. In particular, lunar sample specimens can be made available on short-term loans for certain educational purposes. Details are in Section VIII.

III. GENERAL OUTLINES

A. NASA Policy on Unsolicited Proposals - Proposers should be aware of the general policy at NASA with respect to unsolicited proposals. Specifically, the NASA Procurement Regulation, Part 4, specifies that the initial receiving office, prior to making a comprehensive evaluation of a document apparently submitted as an unsolicited proposal, shall determine that the document: (1) contains sufficient scientific, technical, and cost information to enable meaningful evaluation; (2) has been approved by a responsible official of the proposing organization or a person authorized to contractually obligate such an organization; and (3) does not merely offer to perform standard services or to provide "off-the-shelf" articles. If the document does not meet these requirements, a comprehensive evaluation will not be made and the document will be handled as correspondence.

B. Disclosure of Proposal Data - It is NASA's policy to use the technical data contained in proposals for evaluation purposes only. Where any of such technical data constitutes a trade secret under the law and the offeror, or his potential subcontractor, desires to maintain trade secret rights in such technical data, the following "Notice" must be affixed to the cover sheet of the proposal specifying therein the pages of the proposal which contain trade secrets to be restricted in accordance with the conditions of the "Notice." Thereafter, it is NASA policy to protect such noticed technical data as a trade secret. NASA assumes no liability for use or disclosure of any proposal technical data to which the "Notice" has not been applied.

The text of the "Notice" is as follows:

NOTICE

> Data on pages ..... of this proposal constitute a trade secret. It is furnished to the government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes, provided however, in the

event a contract is awarded on this proposal the government may obtain in the contract additional rights to use and disclose this data.

IV. SCHEDULE

A. Submission and Review

The Planetary Geology, Planetary Geophysics and Geochemistry, and Planetary Materials programs are open and continuing programs in which unsolicited proposals may be submitted at any time. In order to make the best use of resources, however, the review of proposals takes place twice each year, in the September-October period and again in the February-March period. Many investigators have found that the fall review period is better for their research schedules because timing of approvals and awards permits university personnel to plan their summer research more effectively, especially when summer commitments to graduate students and other collaborators are involved. Consequently, the fall review has become the major review effort. Some investigators have found that the spring review is more appropriate to their schedules. As a result, the program offices normally reserve funds for the spring review exercise, which has been by far the smaller of the two reviews.

Proposals received by NASA before August 1980 will be reviewed in September-October 1980, and the proposers will be notified of the results of the review by mid-December 1980. We cannot guarantee that proposals received during or after August 1980 can be evaluated for notification by mid-December 1980.

Proposals received during or after August 1980, but before mid-January 1981 will be reviewed by February-March 1981, and the proposers will be notified of the results of the review by May 1, 1981.

Generally, it will not be possible to evaluate proposals received after mid-January 1981 until the next review cycle. Proposers will be notified and the proposal will be held for review in September-October 1981, if appropriate.

B. Approval and Awards

Proposals which are approved during the September-October review will normally have starting dates in the months of February through May of the following year. Those proposals approved during the February-March review will normally have starting dates in the following July, August and September. All NASA awards will be made from NASA Headquarters except for those for analysis of lunar samples which are processed by the Johnson Space Center. Arrangements for foreign participation in these programs will be made through the International Affairs Division, NASA Headquarters (address given in Section VI.B.).

Proposals may be submitted which request periods of performance of one or more years. However, proposals which are approved and can be funded within the available budget will normally result in awards that are for a period not in excess of 12 months. Renewal proposals are required for all subsequent year funding.

The various program offices will select a significant number of high-quality, long-term research efforts for "continuing award" agreements which provide for reduced requirements for second and third year renewal proposals. In these cases, but only if he or she has been so informed by the appropriate Discipline Scientist, an investigator may elect to rely on the scientific/technical evaluation of his original proposal and may submit an abbreviated renewal proposal for the second or third year of a two or three-year effort.

This abbreviated proposal should consist only of a progress report, a work statement, updated cost information, and copies of papers resulting from the previous year's effort. The original proposal and its evaluation will be considered together with the progress report and updated cost information to determine if an extension is warranted. Awards for renewal funding for the extension are generally subject to the availability of funds, the proposal's continued relevance to NASA's programs, and a demonstration of satisfactory progress on prior effort.

V. PROPOSAL SCOPE, FORMAT, AND CONTENT

We encourage investigators to submit proposals to a single program when possible. We realize that the scope of the proposed work may not fit entirely within the confines of a single administrative unit. Some proposals to the Planetary Geology Program, for example, may contain minor aspects of the proposed work that might normally be considered more appropriate to the Geophysics and Geochemistry Program, and vice versa. Research on Planetary Materials may include components such as theoretical and modelling studies or studies of analog materials that would be most appropriately supported by another program if those aspects of the work were considered independently. However, it is recommended that each proposal be identified as appropriate to the Planetary Geology, Planetary Geophysics and Geochemistry, or the Planetary Materials program on the basis of the dominant aspect of the research proposed. Note, however, that any proposal that requires access to lunar samples must be identified as a Planetary Materials proposal.

In those rare cases where research is truly cross-disciplinary and where no dominant, programmatic aspect can be identified, or in the case where use of lunar samples is required but where the actual analysis of these materials constitutes only a minor portion of the proposed effort, a single combined proposal is acceptable. However, in such a combined proposal, separate detailed budgets should be included for the work to be funded through each program, and sufficient descriptive detail should be given to permit separation of the effort in the event that one or more segments of the proposed work are not accepted.

A. Format - Models for a proposal cover sheet, abstract sheet, personnel sheet, and budget summary are enclosed. The use of these sheets in proposal preparation is encouraged. (Budget summary sheets are not needed for non-U.S. proposals.) These sheets (which may be duplicated for additional copies) should consititute the first four pages of all proposals. For more efficient logging and handling of proposals, it is suggested that no additional covers, binders, etc. be used in front of the model cover sheet.

B. Technical Information -

1. TITLE- The title should be informative, detailed, and as brief as possible in order to facilitate reference to the proposal. Proposers seeking extension of a current award should attempt to maintain the current title, and the current grant/contract number should be included.

2. ABSTRACT- It is our intention to publish a collection of the abstracts of all the funded proposals. This volume will be distributed to the scientific community without further editing. The "abstract sheet" (the third of the four model sheets) will be used for this purpose.

   In addition, this sheet will be used to help us prepare the technical summary required by our Procurement Office. Delays in funding will be minimized if the format described below is followed strictly.

   The abstract should be typed, single spaced, within the box drawn on the model sheet. Paragraphs numbered a through d should include the following:

   a. A brief statement of the overall objective and justification of the work.

   b. Summary of accomplishments during the period since the past proposal (for proposals requesting extension of current awards).

   c. Brief listing of work to be accomplished during the award period and of the approach to be used.

   d. Bibliography of one or two recent publications by the proposer of work relevant to the proposal.

3. WORK STATEMENT - This section describes and justifies the proposed research. It should be as clear and concise as possible. The scientific

objectives and significance of your investigation should be described briefly. Its relevance to a lunar or planetary problem must be made clear. This should be followed by a succinct but clear discussion of the experimental approach or methodology to be followed. It is desirable that each proposal be divided when possible into projects that can be conducted independently and that these tasks be enumerated and described. If the investigation cannot be completed within a 12-month period of the award, the work statement should contain a brief description of work plans and budget requirements for each year of the effort. It is suggested that the length of the work statement should not exceed ten (10) pages.

Although NASA will accept the long-term objective of multi-year proposals, awards will normally be for a period of performance not exceeding twelve months (See Section IV.B.). Investigators who have received a "continuing award" award on a proposed multi-year research project and who have been informed that they may submit a proposal of reduced scope for the second or third year's effort under this "continuing award" may, at their discretion, submit only a progress report of the first or second year's effort, a budget, a brief work statement for the second or third year's effort, and copies of papers or pre-prints resulting from the prior year's effort. The statement of work and budget statement together should be less than five pages in length. All other information should be in an appendix. This information will be considered, along with the original evaluation of the scientific/technical proposal to determine if an extension is warranted. A complete new proposal must be submitted at the expiration of each two-year (or three-year when applicable) period during the course of the project and at any other time that work outside the scope of the original proposal is contemplated.

4. DATA, SAMPLE, AND CARTOGRAPHIC REQUIREMENTS

a. Data stored in NASA repositories is generally available for use by accepted investigators. The proposal should give sufficient detail on the

requirements, quantity, and format of data desired--e.g., magnetic tape format compatible with the investigator's computer, microfilm of data plots, photos, etc.--for NASA to determine whether the data can be supplied.

b. Proposers who wish to perform experiments on lunar materials should describe the specific types and amounts of lunar materials required. They should also specify the experimental procedures to be used and their effects on the lunar materials used. Because of the limited amount of materials available, non-destructive experimental techniques should be proposed wherever possible.

c. All proposals which request that NASA supply lunar samples should demonstrate that the proposer is familiar with the material available. A source of information on the extent and availability of lunar samples is given in Section VII.

d. All proposals which request new map products such as topographic maps, photomosaics, elevation profiles, and control-net points should provide a full justification including the purpose for which the map product will be used, the reason why existing cartographic products cannot be used, and detailed specifications for the type of product required.

Because preparation of new cartographic products requires lead times of one year or more, any requests for new map products must be for highly important research that is to be performed in years subsequent to the currently proposed effort and for which renewal proposals will be submitted. Proposals which anticipate the need for new cartographic products, therefore, should contain work plans and justifications for an extended period effort. These requests must be accompanied by a detailed work statement covering the period during which the new map product will be used.

5. SUPPORTING FACILITIES - Laboratories, specialized equipment, etc. available for use in the research should be described. Equipment which is proposed to be purchased with NASA funds should be specified and justification for the expenditure given.

6. SCIENTIFIC AND TECHNICAL PERSONNEL - The level of effort should be listed, in approximate percentage of time, for each participant in the program. A brief summary of the scientific background and relevant experience of the Principal Investigator (PI), and of each Co-Investigator (Co-I) must be given. NASA will accept only one PI for a given research effort.

   a. PI - The proposal must designate a PI who is responsible for the primary direction of the investigation. In the Sample program, the PI is also responsible for the security of the lunar samples. NASA will accept only one PI for a given research effort and will not accept "Acting PI's" or "Co-PI's."

   b. Co-I - This title should be restricted to a limited number of well-qualified senior-level scientists who will be contributing materially to the research and who would be capable of independently directing the proposed research. Certain personnel, e.g., (graduate students, postdoctoral fellows) should not be designated as Co-Investigators unless they meet these qualifications. It is generally more appropriate to designate such individuals as scientific collaborators.

   c. Scientific Collaborators - All qualified scientists whose work on the research will be sponsored by NASA funds should be listed. For proposals in the Sample program, all persons who will have access to the samples must be listed.

7. BIBLIOGRAPHY - All publications by the PI and the Co-I's <u>that are specifically relevant</u> to the proposed research, or to planetary studies in general, should be listed.

8. PROGRESS REPORT - This section applies only to those PI's who are currently supported by NASA for research on lunar and planetary problems and who are submitting a renewal proposal. This report shall cover the period since the submission of the last accepted proposal for this effort (generally 12 months or less). The report should include an analysis of achievements toward the objectives outlined in the previous proposal and a complete listing of all publications which have resulted.

C. Administrative and Budgetary Information -

1. BUDGET SUMMARY - A budget summary (not necessary for non-U.S. proposals) should be given in the format supplied and should be included as page 4 of each proposal. The budget summary should give two budget totals:

a. The amount of money required for support of the research during the next award period (generally 12 months). This should be done without regard to step funds or possible carryover from past periods. (For example, a request for an operating level of $50,000 for 12 months where $35,000 has already been provided as forward funding for this period would still be listed as $50,000.)

b. The amount of money required for support of the research until completion of a multi-year effort, once again without regard to the existence of step funds or carryover from previous periods. The amount of time required to complete the effort should also be given. It is recognized that this will be an estimate. NASA support of the complete effort will be contingent on the submission and NASA acceptance of follow-on proposals.

c. It is desirable that the proposer identify the appropriate program to which the proposal is addressed, Geophysics and Geochemistry, Planetary Materials, or Geology. In those rare cases where a combined proposal applies to more than one program, the percentage distribution of effort among the programs should be estimated.

d. It is desirable that each proposal be divided when possible into projects that can be conducted independently, and that these tasks be enumerated and described in the Work Statement (Section V.B.2). Estimated funds and manpower for these projects should be indicated in the Budget Summary.

2. DETAILED BUDGET - The detailed budget should itemize expenses in each of the categories listed on the Budget Summary sheet in sufficient detail to allow meaningful evaluation of costs. If sufficient detail is not provided, evaluation of the proposal will be postponed until such information is available; this may result in consideration being delayed until the next review cycle. It should give the total funds requested from NASA during the award period (generally 12 months). In the event that multi-year research is proposed, a detailed budget for the entire effort may be given.

3. INVESTIGATIONS AT OTHER INSTITUTIONS - In those cases in which research is to be conducted by scientific co-investigators or collaborators who are not employed by the sponsoring institution and are to be funded through this award, then evidence of their commitment should be provided.

4. SOURCES OF OUTSIDE SUPPORT - The proposal should list other supported research conducted by the PI, name of sponsor, title of the research, and the level of funding received. There should be a similar listing for each CO-I who is to contribute to the research. The lists should include proposals for support that are currently under consideration.

5. DATES - The proposal should include the date of its preparation or submission and the proposed starting and completion dates of the research. The duration of the award will normally not exceed 12 months.

6. FOREIGN PROPOSALS - Foreign proposers should arrange their own funding support (see VI.B.).

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use $300

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA 451

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use $300

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA 451

INFORMATION COPY

PRINCIPAL INVESTIGATOR: _____

INSTITUTION: _____

TITLE: _____

.....

PRINCIPAL INVESTIGATOR: _____

INSTITUTION: _____

TITLE: _____

.....

PRINCIPAL INVESTIGATOR: _____ (Telephone No.)

INSTITUTION (Complete Address): _____

_____

TITLE OF PROPOSAL: _____

Budget information is thus not required in foreign proposals. Investigators are requested to comply with all other guidelines given above.

D. Sponsorship -

1. DOMESTIC PROPOSALS - Investigators are normally sponsored by an educational or research institution or corporation which must endorse the proposal and forward it to NASA.

2. FOREIGN PROPOSALS - Investigators from outside the United States should obtain prior endorsement from the official sponsoring agency of their government; such endorsement (see VI. B.) is required for evaluation of the proposals.

E. Sample Security Plan - The section applies only to proposals for research in lunar material. A PI currently supported by an award in this area must include a statement of the effective date of the approved Sample Security Plan. A proposer who is not currently supported should become familiar with the requirements of Paragraph 3.1.1, entitled, "Sample Security Plan Content," of the latest revision of the document JSC-06090, "Handbook--Lunar Sample Program," and include a statement of intent to prepare and abide by such a plan if the proposal is approved. (For availability of the above handbook see Section VII. H.)

VI. PROCEDURES FOR SUBMISSION

A. Domestic Proposals - Each proposal from an investigator within the United States should be submitted under covering letter signed by an official of the proposer's sponsoring organization who is authorized to commit the organization to the proposal and its contents. The covering letter for a proposal to extend existing support should give the number of the grant or contract or, in the case of a NASA Field Center, the RTOP/Task number, and should state that this proposal is for an extension.

1. Proposals for new work (first submission, submissions by investigators who have been informed that complete technical proposals are necessary for peer review, or submissions for renewal of efforts approved previously for one year only).

   The address to which proposals are to be sent is an exception to the normal unsolicited proposal submission instructions. All proposals to the Planetary Geophysics and Geochemistry, Planetary Materials, and Planetary Geology programs should be mailed to:

   The Lunar and Planetary Institute
   3303 NASA Road 1
   Houston, TX 77058

   Attn: Lunar and Planetary Proposal Review

   Eighteen (18) copies (complete with progress reports where applicable), including one original signature copy, are requested.

2. Renewal Proposals for CONTINUING WORK (from investigators who have been informed that renewal proposals of reduced scope are acceptable).

   a. Renewal proposals of reduced scope to the Geophysics and Geochemistry, and Planetary Materials should be mailed to:

   The Lunar and Planetary Institute
   3303 NASA Road 1
   Houston, TX 77058

   Attn: Lunar and Planetary Proposal Review

   An original signature version and five (5) copies are requested.

   b. Renewal proposals of reduced scope to the Planetary Geology Program should be mailed to:

Discipline Scientist
Planetary Geology Program (RP)
Planetary Division (Code SL-4)
NASA Headquarters
Washington, DC 20546

An original signature version and five (5) copies are requested.

B. Foreign Proposals - Responses for participation in Planetary Geology, Planetary Geophysics and Geochemistry, and Planetary Materials research by individuals outside of the United States of America should be submitted in the format prescribed in Section V above. Since foreign participation is not NASA-funded, no budget information need be included in the proposal. All proposals must be reviewed and endorsed by an appropriate sponsoring agency in the proposer's country. Both proposal and endorsement should be in English, and should be forwarded (the original plus one copy) to:

National Aeronautics and Space Administration
International Affairs Division
Code LID-18 (Planetary)
Washington, DC 20546
U.S.A.

Eighteen (18) review copies of the proposal (which need not bear original signatures) should be mailed directly to the Lunar and Planetary Institute, address above in VI.A. Foreign scientists submitting a proposal of reduced scope (see IV.A.2) should send only five (5) review copies of the proposal to the Lunar and Planetary Institute.

Foreign proposals received by the National Aeronautics and Space Administration will go through the same evaluation and selection process as U.S.-originated proposals. Should a foreign responder be selected, NASA will arrange with the sponsoring foreign agency for the proposed participation on a cooperative (no exchange of funds) basis, in which both NASA and the sponsoring foreign agency will bear the cost of discharging its respective responsibilities.

C. All Proposers - A sheet with post cards imprinted on it has been attached to the Guidelines. These cards will be used to acknowledge the receipt of your proposal by NASA. Please type the name and addresses of the person(s) you wish to have notified on the front of the card. One card should be addressed to the appropriate business representative. The final portion of the sheet, "information copy," is for our records. IT IS EXTREMELY IMPORTANT THAT YOU COMPLETE THIS SHEET AND RETURN IT WITH YOUR PROPOSAL, in order to expedite notification of the receipt of your proposal and our management of it.

D. Further Information - Questions concerning submission of proposals to the Planetary Geology program should be directed to Dr. Joseph Boyce, Discipline Scientist, 202/755-3645. Questions concerning submission to the Planetary Geophysics and Geochemistry program should be addressed to Dr. William L. Quaide, Discipline Scientist, 202/755-1602. Similar questions for Planetary Materials program should be addressed to Dr. Bevan M. French, Discipline Scientist, 202/755-3760. Addresses are given in Section VII. E.

VII. SOURCES FOR INFORMATION, USEFUL POINTS OF CONTACT, AND SAMPLE STUDY FACILITIES

Investigators should be aware of sources for data which might be used in their research. Before submitting a proposal, each investigator should determine that the required data can be made available. Useful contacts for making these determinations are given below:

A. General Lunar and Planetary Information - The Lunar and Planetary Institute (LPI) in Houston, Texas, is the most concentrated and readily accessible source of information available on lunar science. Among the many valuable services available to the science community from the LPI are:

1. LPI BULLETIN - A periodic information bulletin published for free distribution to interested scientists and other individuals upon request.

2. LUNAR AND PLANETARY DATA CENTER - The LPI maintains an extensive library for reprints, books, journals, maps, photographs, data, etc., which are available for on-site use and, in special cases, loan. It serves as a source of general information on the kinds of lunar samples or returned artifacts in the collection at the Curatorial Facility (Section VII. F.).

3. LIBRARIAN SERVICES - Literature aids, bibliographies, and conference proceedings can be provided.

4. STAFF SCIENTISTS - Scientists who are active in lunar and planetary research and in the maintenance of the Lunar and Planetary Data Center, are available to assist in examination of data prior to proposal preparation.

5. LPI FACILITY - Arrangements can be made for an appointed investigator to conduct part of an approved investigation at the LPI. For more information about these appointments, write to:

Director
The Lunar and Planetary Institute
3303 NASA Road 1
Houston, TX 77058

Phone: (713) 488-5200 FTS: 525-3436

B. Data from Completed NASA Flight Programs - Data from completed flight experiments are stored in the National Space Science Data Center (NSSDC). Data of interest to investigators include: (1) extensive lunar and planetary photographs, and (2) data from numerous flight science experiments. Information on the variety, format, and content of material available can be obtained from the NSSDC.

The address of the NSSDC is:

National Space Science Data Center
Code 601
NASA/Goddard Space Flight Center
Greenbelt, MD 20771

Phone: (301) 344-6695

C. Data from USSR Programs - A limited amount of data from Zond and Luna flights are available in the United States. In addition, there have been some publications by U.S. scientists of their analyses of USSR lunar samples from Luna-16, -20 and -24. In order to obtain information on the availability of this data, please contact:

World Data Center-A
Code 601
NASA/Goddard Space Flight Center
Greenbelt, MD 20771

Phone: (301) 344-6695

D. Planetary Cartographic Products - A variety of planetary cartographic products are available such as topographic orthophotomaps, geological maps, and other special maps and geodetic information. Requests from accepted investigators for production of special maps or other cartographic materials will be accommodated when possible. Information on available data or specific maps may be obtained from the Discipline Scientist, Planetary Geology (address and telephone number in Section VII.E.).

E. Data from Prior NASA Research Programs - NASA encourages publication of the results of each of their sponsored research tasks. Thus, the information gained through these studies is generally available in the open literature.

1. Planetary Geophysics and Geochemistry - Requests for information about specific studies sponsored by this Program may be addressed to:

Discipline Scientist
Planetary Geophysics and Geochemistry
Planetary Division (Code SL-4)
NASA Headquarters
Washington, DC 20546

Phone: (202) 755-1602 FTS: 755-1602

2. Planetary Materials - Requests for information about specific studies in the Planetary Materials Program, including Lunar Samples, Meteorites, and Interplanetary Dust, may be addressed to:

Discipline Scientist
Planetary Materials
Planetary Division (Code SL-4)
NASA Headquarters
Washington, DC 20546

Phone: (202) 755-3760 FTS: 755-3760

3. Planetary Geology - Requests for information about specific studies in the Planetary Geology Program may be addressed to:

Discipline Scientist
Planetary Geology
Planetary Division (Code SL-4)
NASA Headquarters, DC 20546

Phone: (202) 755-3645 FTS: 755-3645

F. Lunar Sample Experiment Facilities - The new Lunar Sample Laboratory at the Johnson Space Center contains a laboratory for PI experiments. The purpose of this laboratory is to allow studies to be made on lunar samples that are too large to be taken to an investigator's own laboratory. Such studies as reflectance and magnetic measurements on whole rocks or on lunar core samples are possible. Volatiles may be extracted from the unprocessed lunar cores. Particle counting experiments would be possible also, as well as any other other experiment that would not endanger or alter the samples. For information on this experiment facility, contact Lunar Sample Curator at the address given below.

G. Lunar Sample Data - General information on the kinds of lunar samples and returned artifacts in the collection, their availability, and previous research carried out on them can be obtained from the library at the LPI (see Section VII.A.2.). Detailed information on specific samples can be obtained from:

Lunar Sample Curator
Code SN2
NASA/Johnson Space Center
Houston, TX 77058

Phone: (713) 483-3274 FTS: 525-3274

H. Sample Security Requirements - Information on sample security requirements and copies of JSC-06090, "Handbook - Lunar Sample Program," can be obtained from:

Mr. John W. Harris
Code SN2
NASA/Johnson Space Center
Houston, TX 77058

Phone: (713) 483-3274 FTS-3274

I. Planetary Geology Space Image Center - Space Image Centers contain nearly half a million images of the planets and their satellites taken both from Earth and in space, as well as topographic and geologic maps produced from this imagery. The Centers, located at several different institutions, are intended for use by individuals and groups who use photographic and cartographic materials of the Moon and planets in their research programs. These programs include geologic, photometric, colorimetric, photogrammetric, and atmospheric dynamical studies. In addition to the local scientists and their associates who use these data on a daily basis, NASA principal investigators and others elsewhere throughout the country are encouraged to use the Space Image Centers. There are many researchers who use this type of material but have access to only limited collections in their own institutions. These individuals can significantly enhance their research programs by using one of the Centers.

The Centers are not facilities for the production of photographs for users. Such materials can be obtained from the National Space Science Data Denter (address in VII.B.). The Centers are used to study and/or select lunar and planetary images for research in the study of planetary surfaces.

At the present time the following Centers are operational:

1. Jet Propulsion Laboratory, Pasadena, CA 91103
2. University of Arizona, Tucson, AZ 85721
3. U.S. Geological Survey, Flagstaff, AZ 86001

4. Washington University, St. Louis, MO 63130
5. Cornell University, Ithaca, NY 14853
6. Brown University, Providence, RI 02912

A Center at the Lunar and Planetary Institute, Houston, TX 77058, is scheduled for opening in the fall of 1980.

Proposers who are interested in making use of these Centers should address inquiries to the Director, Planetary Image Center, at the Center closest to their home institution.

K. Vertical Gun Impact Facility - A NASA facility for studying impact cratering and associated phenomena, the Ames Research Center Vertical Gun Impact Facility, is available for use of investigators whose proposed research has been approved. The gun is a unique impact range capable of launching projectiles of various masses at several velocities and angles from the horizontal into a large target chamber capable of holding a variety of target materials of various configurations. For further information regarding the capabilities and use of this facility, potential users should address inquiries to:

The Lunar and Planetary Institute
3303 NASA Road 1
Houston, TX 77058

Attn: Ames Vertical Gun Coordinator

Use of the facility will be gained through proposals submitted to the Planetary Geophysics and Geochemistry program with coordination and scheduling of approved experiments handled by the Lunar and Planetary Institute.

VIII. EDUCATIONAL AND PUBLIC AFFAIRS MATERIALS

Persons who do not wish to formally propose a major research effort in the Planetary Programs may still have access to information from the Lunar and Planetary Programs of past years. Data and photography from spacecraft missions described in Section VII.B. are

available upon written request to the NSSDC. Charges for modest amounts of data may be waived when they are used for scientific or specific educational purposes. Some educational and general interest publications on the lunar and planetary programs are available. Requests should be sent to:

Community and Education Services Branch
Code LFG-9
NASA Headquarters
Washington, DC 20546

or:

Public Affairs Officer OSS
Code S-6
NASA Headquarters
Washington, DC 20546

A variety of lunar sample materials are also available for educational purposes, and simplified procedures have been developed to provide access to them:

A. A collection of petrographic thin sections of lunar samples is maintained by the Lunar Sample Curatorial Facility at the Johnson Space Center. Scientists and educators may obtain permission to examine these speciments within the Facility.

B. A set of petrographic thin sections of typical lunar samples is available for short-term loans to educators at colleges and universitites in the United States. These sets and their accompanying material are designed for use in undergraduate courses in mineralogy and petrography.

C. A Lunar Sample Educational Package (LSEP) has recently been developed for use in secondary school science classes. The kit contains six small lunar samples which can be examined under a low-power microscope. Accompanying materials include teaching aids and a cassette/slide show describing lunar science results obtained from the samples.

Further details about these programs can be obtained from the Lunar Sample Curator at the address given in Section VII.G.

Some access to lunar data is possible for teachers and other educators through the facilities of the Lunar and Planetary Institute which are described in paragraph VII.A.

Educators may obtain further information about the materials available in the Planetary Materials programs from Dr. Bevan M. French, Discipline Scientist, Planetary Materials (address and telephone no. in Section VII.E.).

A brief course in Planetary Geology at the high school level has been prepared and is available to interested educators. Persons desiring further information should contact Dr. Joseph M. Boyce, Discipline Scientist, Planetary Geology (address and telephone no. in Section VII.E.).

(COVER SHEET)

LOG NO. _____

Date Received _____

DO NOT WRITE IN THIS SPACE

PLANETARY DIVISION

PLANETARY GEOPHYSICS AND GEOCHEMISTRY ☐

PLANETARY MATERIALS ☐

PLANETARY GEOLOGY ☐

TITLE: _____

DATE SUBMITTED: _____

PRINCIPAL INVESTIGATOR: _____
(Signature and Date)

_____
(Typed Name)

_____
(Address, including Zip Code)

_____

_____
(Phone No., including Area Code)

AUTHORIZING INSTITUTIONAL OFFICIAL: _____
(Signature and Date)

_____
(Typed Name)

_____
(Address, including Zip Code

_____

_____
(Phone No., including Area Code)

CO-INVESTIGATORS AND THEIR AFFILIATIONS:

SCIENTIFIC COLLABORATORS AND THEIR INSTITUTIONAL AFFILIATIONS:

BUSINESS REPRESENTATIVE OR SPONSORING AGENCY OFFICIAL:
(Name, Title, Complete Address, and Phone No.)

ADDITIONAL INFORMATION, IF NEEDED:

PROPOSAL SUMMARY

PRINCIPAL INVESTIGATOR: _____
(Name, address, tel. no.) _____
_____

CO-INVESTIGATORS: _____
(Name Only) _____

Title: _____

ABSTRACT (Single-spaced, type within box below. Paragraphs numbered a-d should include: a. brief statement of the overall objectives and justification of the work; b. brief statement of the accomplishments of the prior year, or "new proposal;" c. brief listing of what will be done this year as well as how and why; and d. one or two of your recent publications relevant to the proposed work.):

BUDGET SUMMARY

PRINCIPAL INVESTIGATOR:_____

PROPOSAL TITLE:_____

DESIRED STARTING AND ENDING DATES:_____ GRANT, CONTRACT, OR RTOP NUMBER:_____

SUMMARY OR DETAILED BUDGET(S)

1. Salaries and Wages_____
2. Supplies & Materials_____
3. Equipment Purchases_____
4. Computer Time_____
5. Laboratory Rental and Services_____
6. Publication and Communications
7. Travel_____
8. Other (incl. overhead and benefits)_____
9. Budget/12 months (NASA supported)_____
10. Budget/12 months Institutional Contribution_____
11. Budget/12 months (Total)_____

12. Estimated Totals to Completion of Research:

Funds:_____ Months:_____

Funds Requested from NASA Program Budgets:

PLANETARY GEOPHYSICS AND GEOCHEMISTRY_____

PLANETARY MATERIALS_____ PLANETARY GEOLOGY_____

Summary by Task: (Approximate breakdown; nearest $K, nearest 0.1 manyear)

Task No.	Abbreviated Title	Funds	Manyears Sen. Res.	Post-Doc.	Stu	Tech.	Other
1.							
2.							
3.							
4.							
5.							
6.							

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BIBLIOGRAPHY

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APPENDICES OR ATTACHMENTS (needed only from scientists now in the Lunar Programs)

PROGRESS REPORT (if applicable) AND PERTINENT REPRINTS

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Space Administration

Washington, D.C.
20546

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Space Science Notice

ATMOSPHERE EXPLORER (AE) PROGRAM

18 JULY 1980

NAS 1.53/2:

National Aeronautics and
Space Administration

Washington, D.C.
20546

JUL 07 1980

Reply to Attn of ST-5

Dear Colleague:

This letter is to call attention to the continuing opportunities for participation in NASA's Space Plasma Physics Program, and in particular, to inform you of the existence of a program that will allow guest investigators to become associated with the Atmosphere Explorer (AE) program. The first two AE satellites (C, D) returned valuable scientific data which resulted in many significant scientific papers. The third satellite (E) is still fully operational. A bibliography showing published results of the program to date is appended in Enclosure 2.

The AE project at Goddard Space Flight Center (GSFC) has compiled a data base, the Unified Abstract file, containing aeronomical measurements in geophysical units at 15-second intervals for at least 30 minutes per orbit for a large fraction of the orbits during the spacecraft life:

AE-C	27,658 orbits	(reentered, December 1978)
AE-D	1,370 orbits	(reentered, February 1976)
AE-E	23,476 orbits	(in orbit, entry expected mid-1981)

In addition, the AE-E spacecraft can be operated by itself or for coordinated observations to obtain new data in special modes to meet specific scientific requirements.

To make wider use of this national scientific resource, the Office of Space Science (OSS) has available limited resources for participation in the AE guest investigator program. Guest investigators may use data that have already been acquired by the AE satellites, or may propose instrument or spacecraft operations for future data acquisition by AE-E. Prospective guest investigators should note that AE-E is expected to reenter between July and December 1981.

If you are interested in participating in the AE guest investigator program or any facet of NASA's Space Plasma Program, you may wish to submit an unsolicited proposal setting forth your proposed study. You may wish to work with a member of the

best copy available

investigator team on an existing AE terminal, or data may be made available in reasonable amounts from the Unified Abstract file. Proposals may include purchase or rental of appropriate terminals to utilize the AE data system. However, any required access to the data system or expenditure for hardware should be clearly justified in the proposal, as the Office of Space Science wishes to use the limited funds available to support personnel rather than hardware or major software development in this data analysis program. Further, it is anticipated that, in most cases, NASA support would be limited to data provision and limited funding, probably not exceeding $25,000.

The AE satellites and their instrumentation are described in Radio Science, 8, (4) 1973. Mr. N. W. Spencer, Code 960, (301/344-5001), the Project Scientist, will provide current information on the AE-E orbit, data availability and instrument status.

Should you choose to submit a proposal, it would be helpful if you would follow the guidelines suggested in Enclosure 1. Upon receipt, and after examination to ensure that the proposal is relevant and complete, the proposal will be reviewed by peers of the proposer in the scientific community.

Acceptance of unsolicited proposals for support will be by the Solar Terrestrial Program Office and will take into account comments of the reviewers, availability of funds, and current policies regarding the distribution of funds among the various topics of research.

It is anticipated that most selections for support will occur by September 1980. Proposals are welcome at any time; but to be eligible for the selection dates above, they should arrive at the addresses given in Enclosure 1 by September 30, 1980.

Questions should be addressed to Dr. E. R. Schmerling, Code ST-5, NASA Headquarters, Washington, DC 20546, phone 202/755-3685 or N. W. Spencer, Code 960, NASA/Goddard Space Flight Center, Greenbelt, MD 20771, phone 301/344-5001.

Sincerely,

Thomas A. Mutch
Associate Administrator
for Space Science

Enclosures:
1. Guidelines for Participation in NASA's Space Physics Program
2. Bibliography of AE Reports

Enclosure 1

GUIDELINES FOR PARTICIPATION IN NASA'S SPACE PLASMA PHYSICS PROGRAM

I. PURPOSE

These guidelines contain format and mailing information for submission of unsolicited proposals for research related to NASA's Space Plasma Physics Program.

II. PROPOSAL CONTENT AND FORMAT

The content of the proposal should be in sufficient detail so as to enable a reviewer to make a judgment with respect to (1) the relevance of the proposed research to the Space Plasma Physics Program, (2) the probability that the investigators will be able to accomplish the stated objectives within the requested resources, and (3) its overall value as compared to that of other proposals to this program.

It will be helpful if each proposal is limited to not more than 20 single-spaced, type-written pages (any other pertinent information such as publications, design data, etc., may be included as attachments), and contain at least the following material assembled in the order given:

A. Cover letter. Each proposal should be prefaced by a cover letter signed by an official of the investigator's organization who is authorized to commit the organization to the proposal and its content. The cover letter should refer to the OSS Space Plasma Physics Program.

B. Title page. The title page should contain the following:

1. A short descriptive title for the proposed investigation.

2. Name of the proposing organization(s).

3. Names, full addresses, telephone numbers, and affiliations of the principal investigator and all co-investigators.

4. Date of submission.

5. Total cost.

C. Abstract page. A brief statement of the objective of the proposed research and method of approach.

D. Description of proposed research. A brief introduction, background, and justification should be included. The description should be a full statement of the research proposed, identifying and relating the key elements and identifying the importance of anticipated results. Describe the methods or approaches to be used; as appropriate, discuss the advantages of the proposed approach over alternatives. When it is expected that the research will require more than one year for completion, the proposal should cover the complete project to the extent that it can be reasonably anticipated. The description should distinguish clearly between the first year's work and that planned for subsequent years.

E. Data required. Specify as completely as possible the nature and amount of data required and, if spacecraft operations are required, under what conditions the data are to be obtained.

F. Cost plan (U.S. proposals only). Prepared according to the guidelines of the institution submitting the proposal and including:

1. Cost estimates for direct labor, including individual man-months and rates for the personnel involved.

2. Estimated costs for materials; itemize items over $1000.

3. Travel costs: itemize trips.

4. Overhead rates and costs.

5. Other costs, with explanation.

6. Any other support for the proposed investigation.

7. Total cost of support being requested from NASA.

G. Attachments. Appropriate descriptions of available facilities, bibliographies, and such other materials as desired.

H. Disclosure of proposal data. It is the policy of NASA to use technical data included in unsolicited proposals for evaluation purposes only. However, due to the administrative problems involved in handling the large number of unsolicited proposals received, the Government cannot assume liability for disclosure or use of such technical data unless it is marked by the submitter in accordance with the following requirements. Each proposal containing technical data, which the submitter intends to be used by NASA for evaluation purposes only, should be marked on the cover sheet with the following legend and shall specify the pages of the proposal to be restricted in accordance with the conditions of the legend:

> Technical data contained in pages ..... of this proposal shall not be used or disclosed, except for evaluation purposes, provided that if a contract or grant is awarded to this submitter as a result of or in connection with the submission of this proposal, the Government shall have the right to use or disclose this technical data to the extent provided in the contract or grant. This restriction does not limit the right to use or disclose technical data obtained from another source without restriction.

III. ADDRESSES

Ten copies of each proposal should be submitted as follows:

A. Proposals from organizations in the United States:

Dr. E. R. Schmerling (AE)
Atmospheric Explorer Program Scientist
Code ST-5
NASA Headquarters
Washington, DC 20546

B. Proposals from foreign sources for collaboration or for use of NASA-unique facilities:

International Affairs Division
LID-18(AE)
NASA Headquarters
Washington, DC 20546

Proposals should be in English and should be endorsed by the official national agency of the proposer's country which is responsible for space and/or scientific activities. Should a proposal be selected, NASA will arrange with the sponsoring national agency for the proposed participation on a cooperative (no exchange of funds) basis, in which NASA and the foreign sponsoring agency will each bear the cost of discharging their respective responsibilities.

Enclosure 2

ATMOSPHERE EXPLORER PAPERS AND TALKS

I. ATMOSPHERE EXPLORER PAPERS

A. Published

1. Dalgarno, A., W. B. Hanson, N. W. Spencer, and E. R. Schmerling, "The Atmosphere Explorer Mission," Radio Science, 8, 263, 1973.

2. Spencer, N. W., L. H. Brace, and D. W. Grimes, "The Atmosphere Explorer Spacecraft System," Radio Science, 8, 267, 1973.

3. Nier, A. O., W. E. Potter, D. R. Hickman, and K. Mauersberger, "The Open-Source Neutral-Mass Spectrometer on Atmosphere Explorer-C, -D, and -E," Radio Science, 8, 271, 1973.

4. Pelz, D. T., C. A. Reber, A. E. Hedin, and G. R. Carignan, "A Neutral-Atmosphere Composition Experiment for the Atmosphere Explorer-C, -D, and -E," Radio Science, 8, 277, 1973.

5. Spencer, N. W., H. B. Niemann, and G. R. Carignan, "The Neutral-Atmosphere Temperature Instrument," Radio Science, 8, 287, 1973.

6. Champion, K. S. W., and F. A. Marcos, "The Triaxial-Accelerometer System on Atmosphere Explorer," Radio Science, 8, 297, 1973.

7. Rice, C. J., V. L. Carter, S. R. LaValle, W. T. Chater, D. A. Jones, C. G. King, and D. F. Nelson, "Atmosphere Explorer Pressure Measurements: Ion Gauge and Capacitance Manometer," Radio Science, 8, 305, 1973.

8. Hoffman, J. H., W. B. Hanson, C. R. Lippincott, and E. E. Ferguson, "The Magnetic Ion-Mass Spectrometer on Atmosphere Explorer," Radio Science, 8, 315, 1973.

9. Brinton, H. C., L. R. Scott, M. W. Pharo III, and J. T. Coulson, "The Bennett Ion-Mass Spectrometer on Atmosphere Explorer-C and -E," Radio Science, 8, 323, 1973.

10. Hanson, W. B., D. R. Zuccaro, C. R. Lippincott, and S. Sanatani, "The Retarding-Potential Analyzer on Atmosphere Explorer," Radio Science, 8, 333, 1973.

11. Brace, L. H., R. F. Theis, and A. Dalgarno, "The Cylindrical Electrostatic Probes for Atmosphere Explorer-C, -D, and -E," Radio Science, 8, 341, 1973.

12. Hinteregger, H. E., D. E. Bedo, and J. E. Manson, "The EUV Spectrophotometer on Atmosphere Explorer," Radio Science, 8, 349, 1973.

13. Heath, D. F., and J. F. Osantowski, "An Extreme UV Photometer for Solar Observations from Atmosphere Explorer," Radio Science, 8, 361, 1973.

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14. Hays, P. B, G. Carignan, B. C. Kennedy, G. G. Shepherd, and J. C. G. Walker, "The Visible-Airglow Experiment on Atmosphere Explorer," Radio Science, 8, 369, 1973.

15. Barth, C. A., D. W. Rusch, and A. I. Stewart, "The UV Nitric-Oxide Experiment for Atmosphere Explorer," Radio Science, 8, 379, 1973.

16. Doering, J. P., C. O. Bostrom, and J. C. Armstrong, "The Photoelectron-Spectrometer Experiment on Atmosphere Explorer," Radio Science, 8, 387, 1973.

17. Hoffman, R. A., J. L. Burch, R. W. Janetzke, J. F. McChesney, S. H. Way, and D. S. Evans, "Low-Energy Electron Experiment for Atmosphere Explorer-C and -D," Radio Science, 8, 393, 1973.

18. Armstrong, J. C., and A. J. Zmuda, "The Atmosphere Explorer Magnetometer Experiment," Radio Science, 8, 401, 1973.

19. Nier, A. O., W. E. Potter, D. C. Kayser, and R. G. Finstad, "The Measurement of Chemically Reactive Atmospheric Constituents by Mass Spectrometers carried on High-Speed Spacecraft," Geophys. Res. Lett., 1, 197, 1974.

20. Hanson, W. B., "Earth's Dynamic Thermosphere," Astron. & Aeron., P. 16-20, January 1975.

21. Walker, J. C. G., D. G. Torr, P. B. Hays, D. W. Rusch, K. Docken, G. Victor, and M. Oppenheimer, "Metastable ^2P Oxygen Ions in the Daytime Thermosphere," J. Geophys. Res., 80, 1026, 1975.

22. Schunk and J. C. G. Walker, "Charged Particle Temperatures in the Upper Atmosphere," Progress in High Temperature Physics and Chemistry, Vol. 1.

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24. Rusch, D. W., A. I. Stewart, P. B. Hays, and J. H. Hoffman, "The NI (5200Å) Dayglow," J. Geophys. Res., 80, 2300, 1975.

25. Young, E. W. and P. S. Caruso, "A Satellite Temperature-Flux Monitor for Low Perigee Applications," 21st International Instrument Symposium, Philadelphia, Pennsylvania, May 1975.

26. Barbieri, R. W., J. L. Cooley, and K. G. Nickerson, "Atmosphere Explorer (AE-C) Adaptive Mission Design and Trajectory Performance," AAS/AIAA Astrodynamics Specialist Conference, Nassau, Bahamas, July 1975.

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28. Champion, K. S. W., "Dynamics and Structure of the Quiet Thermosphere," JATP, 37, 915, 1975.

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29. Mauersberger, K., M. J. Engebretson, W. E. Potter, D. C. Kayser, A. O. Nier, "Atomic Nitrogen Measurements in the Upper Atmosphere," Geophys. Res. Lett., 2, 337, 1975.

30. Doering, J. P., W. K. Peterson, C. O. Bostrom, and J. C. Armstrong, "Measurement of Low Energy Electrons in the Day Airglow and Dayside Auroral Zone from Atmosphere Explorer-C," J. Geophys. Res., 80, 3934, 1975.

31. Torr, M. R., D. G. Torr, J. C. G. Walker, P. B. Hays, W. B. Hanson, J. H. Hoffman, and D. C. Kayser, "Effects of Atomic Nitrogen on the Nocturnal Ionosphere," Geophys. Res. Lett., 2, 385, 1975.

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36. Torr, D. G., M. R. Torr, D. W. Rusch, P. B. Hays, K. Mauersberger, J. C. G. Walker, N. W. Spencer, A. E. Hedin, H. C. Brinton, and R. F. Theis, "Atomic Nitrogen Densities in the Thermosphere," Geophys. Res. Lett., 3, 1, 1976.

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42. Burch, J. L., S. A. Fields, W. B. Hanson, R. A. Heelis, R. A. Hoffman, and R. W. Janetzke, "Characteristics of Auroral Electron Acceleration Regions Observed by Atmosphere Explorer C," J. Geophys. Res., 81, 2223, 1976.

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50. Hoegy, W. R., "New Fine Structure Cooling Rate," Geophys. Res. Lett., 3, 541, 1976.

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52. Mauersberger, K., M. J. Engebretson, D. C. Kayser, and W. E. Potter, "Diurnal Variation of Atomic Nitrogen," J. Geophys. Res., 81, 2413, 1976.

53. Kayser, D. C., and W. E. Potter, "Molecular Oxygen Measurements at 200 km from AE-D Near Winter Solstice, 1975," Geophys. Res. Lett., 3, 455, 1976.

54. Mauersberger, K., W. E. Potter, and D. C. Kayser, "A Direct Measurement of the Winter Helium Bulge," Geophys. Res. Lett., 3, 269, 1976.

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56. Heelis, R. A., W. B. Hanson, and J. L. Burch, "Ion Convection Velocity Reversals in the Dayside Cleft," J. Geophys. Res., 81, 3803, 1976.

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57. Burch, J. L., W. Lennartsson, W. B. Hanson, R. A. Heelis, J. H. Hoffman, and R. A. Hoffman, "Properties of Spikelike Shear Flow Reversals Observed in the Auroral Plasma by Atmosphere Explorer C," J. Geophys. Res., 81, 3886, 1976.

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16. Young, E. R., D. G. Torr, P. Richards, and A. F. Nagy, "A Computer Simulation of the Midlatitude Plasmasphere and Ionosphere," Planet. Space Sci., submitted September 1979.

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19. Torr, D. G., and M. R. Torr, "Causes of the F-Region Winter Anomaly," Geophys. Res. Lett., submitted September 1979.

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22. Rusch, D. W., and J.-C. Gerard, "Satellite Studies of $N(^2D)$ Emission and Ion Chemistry in Aurorae," J. Geophys. Res., to be published.

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25. Torr, D. G., P. G. Richards, and M. R. Torr, "Destruction of $N(^2D)$ by O_2: A Major Source of 6300Å Dayglow Emission," Geophys. Res. Lett., submitted December 1979.

26. Wharton, L. E., N. W. Spencer, and H. C. Brinton, "Correlations Between Neutral Meridional Winds and Ion Densities Observed on AE-E," J. Geophys. Res., submitted December 1979.

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28. Reiff, P. H., J. L. Burch, and R. W. Spiro, "Cusp Proton Signatures and the Interplanetary Magnetic Field," J. Geophys. Res., submitted December 1979.

29. Lee, J. S., J. P. Doering, T. A. Potemra, and L. H. Brace, "Measurements of the Ambient Photoelectron Spectrum from Atmosphere Explorer: I. AE-E Measurements Below 300 km During Solar Minimum Conditions," J. Geophys. Res., submitted.

30. Lee, J. S., J. P. Doering, T. A. Potemra, and L. H. Brace, "Measurements of the Ambient Photoelectron Spectrum from Atmosphere Explorer: II. AE-E Measurements from 300 to 1000 km During Solar Minimum Conditions," J. Geophys. Res., submitted.

II. ATMOSPHERE EXPLORER TALKS

		No. of Papers
1.	NATO Advanced Study Institute on Ion-Molecule Interactions, June 1974.	1
2.	Spring 1974 AGU Meeting, Washington, D.C., April 1974.	13
3.	Fall 1974 AGU Meeting, San Francisco, California, December 1974.	20
4.	COSPAR, Sao Paulo, Brazil, June 1974.	2
5.	AIAA 13th Aerospace Sciences Meeting, Pasadena, California, January 1975.	9
6.	57th Annual Meeting/June of AGU, Washington, D.C., June 1974.	30
7.	IAGA and IUGG Meeting, Grenoble, France, August-September 1975.	18
8.	COSPAR, Varna, Bulgaria, May 1975.	2
9.	Magnetospheric Particles and Fields, 1975, Summer Advanced Study School, Graz, Austria, August 1975.	1
10.	Topical Conference on Magnetospheric Models, San Diego, California, May 1975.	1
11.	IX ICPEAC, Seattle, Washington, July 1975.	1
12.	21st International Instrument Symposium, Philadelphia, Pennsylvania, May 1975.	1
13.	AAS/AIAA Astrodynamics Specialist Conference, Nassau, Bahamas, July 1975.	1
14.	Fall 1975 AGU Meeting, San Francisco, California, December 1975.	16
15.	The James Arthur Annual Lecture on the Sun, May 1975.	1
16.	1975 Spring Annual Meeting, AGU, Washington, D.C., April 1976.	16
17.	COSPAR, Philadelphia, Pennsylvania, June 1976.	8
18.	International Symposium on Solar Terrestrial Physics, Boulder Colorado, June 1976.	4
19.	Second Magnetospheric Cleft Symposium, St. Jovite, Canada, October 1976.	2
20.	Second Symposium on Optical Emissions in the Atmosphere, Stura Zagora, Bulgaria, May 1976.	1
21.	21st Annual Conference of the South African Institute of Physics, July 1976.	1

II. ATMOSPHERE EXPLORER TALKS (Cont'd)

		No. of Papers
22.	1976 Meeting of the Heat Transfer and Fluid Mechanics Institute, Davis, California, June 1976.	1
23.	AE Symposium, Bryce Mountain, Virginia, October 1976.	41
24.	1976 Fall Annual AGU Meeting, San Francisco, California, December 1976.	10
25.	1977 Spring Annual Meeting, AGU, Washington, D.C., May 1977.	17
26.	10th International Conference on the Physics of Electronic and Atomic Collisions, Paris, France, July 1977.	1
27.	IAGA Symposium, Seattle, Washington, August 1977.	8
28.	NATO Advanced Study Institute on Dynamical and Chemical Coupling of Neutral and Ionized Atmosphere, Norway, April 1977.	1
29.	1977 Fall Annual AGU Meeting, San Francisco, California, December 1977.	3
30.	1978 Spring Annual AGU Meeting, Miami, Florida, April 1978.	7
31.	13th ESLAB/COSPAR Symposium, Innsbruck, Austria, May 1978.	6
32.	23rd Annual Conference of the South African Institute of Physics, June 1978	1
33.	AE Symposium II, Bryce Mountain, Virginia, October 1978.	54
34.	1978 Fall Annual AGU Meeting, San Francisco, California, December 1978.	2
35.	1979 Spring Annual AGU Meeting, Washington, D.C., May 1979.	11
36.	Boundary Layer Conference, Alpbach, Austria, June 1979.	1
37.	Chapman Conference on Waves and Instabilities in Space, August 1979.	1
38.	1979 Fall Annual AGU Meeting, San Francisco, California, December 1979.	2
39.	National Radio Science Meeting, URSI, Boulder, Colorado, November 1979.	1

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Space Science Notice

MARS DATA ANALYSIS PROGRAM (MDAP)

JULY 18, 1980

NAS 1.53/2:

NASA
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Space Science
Notice

NASA

National Aeronautics and
Space Administration

Washington, D.C.
20546

18 July 1980

Reply to Attn of **MDAP**

Dear Colleague:

This letter is to call attention to the continuing opportunity to submit unsolicited proposals for participation in a continuing Mars Data Analysis Program (MDAP). It is recognized that the voluminous data that exist, and that are yet to be obtained, constitute a national resource, and that it is necessary to conduct a program whereby Viking and non-Viking program scientists have an opportunity to fully analyze the data and to obtain additional or alternate interpretations of the data.

The program includes, without limitation, laboratory experimentation; photointerpretation; theoretical, analytical, field and comparative studies; and cartographic compilation.

SCOPE

This program is primarily directed towards, but not limited to, analysis of data obtained by the Viking orbiters and landers. However, available within the scope of this program are data obtained by Mariners 6 and 7 (described in summary report in 1971, Journal of Geophysical Research 76, 293-472) and Mariner 9 (described in summary report in 1970, Icarus 12, 3-90) and Viking (described in Science, Aug 27, 1976, Vol. 193, No. 4255; Science, Oct 1, 1976, Vol. 194, No. 4260; Science, Dec 17, 1976, Vol. 194, No. 4271; Journal of Geophysical Research, Special Issue "Scientific Results of the Viking Project" Sept 30, 1977, Vol. 82, No. 28; and Journal of Geophysical Research, Dec 30, 1979, Vol. 84, No. B14 "Second Mars Colloquium").

DURATION OF PROGRAM

The Mars Data Analysis Program is a planned 5-year program, which began October 1, 1978. It is expected that there will be an annual Space Science Notice that announces the objective and scope of this program, provides an update on available data, and suggests procedures to follow to participate.

PROPOSALS

Acceptance of unsolicited proposals will be made by the Planetary Division. We will take into account the overall scientific and technical merit of the proposed effort, the unique capabilities, experience or techniques which the investigator possesses and offers, and such other factors as are pertinent and contribute to the program objectives.

The Mars Data Analysis Program is an open program in which unsolicited proposals may be submitted at anytime. However, it is contemplated that proposals will be reviewed, by a scientific peer group, on a periodic basis. Thus, to receive funding commencing in early to mid FY-81, proposals should be received at NASA by late August 1980. Similarly, to receive funding commencing in late FY-81, proposals should be received by late February 1981. Proposers who submit before late August 1980 can expect notification of results of the proposal review by November 1, 1980.

Instructions for submittal of U.S. proposals are contained in Attachment II, Section II. To be considered, non-U.S. proposals require endorsement and financial support from a foreign agency. Additional instructions for submittal of foreign proposals are contained in Attachment II, Section IV.

Proposals may be submitted covering any period of performance. However, proposals which are accepted will normally result in awards for a period not in excess of 12 months. Renewal proposals are required for all subsequent years' funding. In order to insure continuity of funding, renewal proposals should be submitted to the MDAP Scientist (See Program Management Section) at least four months prior to the anniversary date of the grant or contract.

Investigators may submit an abbreviated renewal proposal for the second or third year of a two- or three-year effort. This abbreviated proposal should consist of a progress report, a work statement, updated cost information, and copies of reports resulting from the previous year's effort. The original proposal and its evaluation will be considered with the progress report and updated cost information to determine if an extension is warranted. Extension of a grant or contract beyond the period of performance contemplated by an initial award is generally subject to the availability of funds, the proposals' relevance to NASA's programs, and a demonstration of satisfactory progress on prior effort.

THE VIKING MISSION

The Viking spacecraft consists of a lander and an orbiter. The Viking I spacecraft was launched on August 20, 1975, and landed in Chryse Planitia on July 20, 1976. The Viking II spacecraft was launched on September 9, 1975, and landed in Utopia Planitia on September 3, 1976.

The following were major Viking scientific objectives:

o Obtain imaging, thermal, and atmospheric water vapor information from orbit with both spatial and temporal variations.

o Conduct investigations of the planetary figure, ephemeris, internal mass distribution, upper and lower atmosphere, and relativity using the spacecraft radio systems.

o Determine the structure, composition, and meteorological phenomena of the Mars atmosphere.

o Obtain images of the Mars surface in both mono and stereoscopic views in black and white, color, and near-IR.

o Determine the physical properties and chemical composition of Mars surface material.

o Observe Martian seismic activity.

o Observe samples of Mars surface material for evidence of biological activity.

VIKING SCIENCE INVESTIGATIONS

The Viking science investigations are described in detail in Icarus 16, 1-16 (1972). The following is intended to provide a brief description of each investigation:

ORBITER

The orbiter carries three instruments mounted on a common scan platform, all boresighted along a common axis, to view the same area of the planet. These three instruments are a pair of high resolution cameras, an infrared atmospheric water mapper, and an infrared radiometer for thermally mapping the surface. The orbiter instruments point toward

the surface during the periapsis of the orbit for high resolution coverage over small areas, or during other phases of the orbit for coverage of larger areas. The radio science experiment utilizes the orbiter S-X band communication systems.

Visual Imaging

At 1500 km altitude, the pictures taken by each camera cover an area 40x40 km with a best resolution of 100 m. The pictures are taken so that on each orbital pass, contiguous frames were obtained over an area two pictures wide (80 km) covering a swath about 500 km long. A selection of filters includes regions of the visible from violet to orange. Color photographs were obtained by reconstruction of images acquired using orange, green and violet filters.

Atmospheric Water Mapper

This employs an infrared spectrometer operating in the 1.4 micrometer region. Its sensitivity is about 1 micrometer of precipitable water, with a field of view of 0.4°.

Thermal Mapper

The thermal mapping experiment uses a radiometer with a fixed array of infrared detectors to cover the spectral region above 6 micrometers. The viewing angle of the instrument is 0.3°.

LANDER

There are nine investigations directly associated with the lander.

Imaging

Two cameras mounted on extensions above the upper surface of the lander take 360° panoramic pictures of the landing site. In combination, the two cameras provide a stereoscopic capability. Each camera takes pictures from the footpad to 40° above the horizon. The resolution of the camera is several millimeters near the footpad and degrades linearly with distance. Color photographs were obtained by color reconstruction.

Inorganic Analysis

Each lander carries an energy-dispersive X-ray fluorescence spectrometer using gas-filled proportional counters. It is designed to determine abundances of elements with atomic numbers equal to or greater than 12. (Complete instrument description is in Icarus 20.)

Biology

The biology investigation consists of three different experiments or tests on several soil samples. The samples were obtained from an area within 3.3 meters of the lander by an extended arm and scoop.

a. Light or dark fixation of carbon (pyrolytic release) tests for photosynthesis or dark fixation of CO or CO_2 using radioactive carbon 14 gas as a tracer; conditions are kept similar to Mars ambient.

b. Metabolism of labeled medium (labeled release) provides a dilute aqueous sample medium for growth of microorganisms; uses radioactive carbon 14 substrate as tracer.

c. Metabolism detected by gas exchange provides a rich growth medium and monitors the gas exchanged between the atmosphere and the culture as indication of production or uptake.

Molecular Analysis

This investigation consists of two parts: (1) analysis of the Martian atmosphere at the surface and (2) analysis of soil samples taken from the surface. The basic detector is a mass spectrometer capable of detecting in the range of parts per million, to parts per billion, for compounds having a mass of 12-200 amu.

Meteorology

Pressure, temperature, and wind velocity, were measured periodically throughout each diurnal cycle.

Seismology

A seismometer was mounted on each lander and coupled to the ground through a landing leg. Due to a malfunction, data were only collected from Viking II. The seismometer operating range is 0.4-4Hz.

Magnetic Properties

A pair of magnets was located on the sampling arm so that they could be brought into contact with the surface. A magnet was also located on the central photometric reference chart. Images were obtained to record results.

Physical Properties

A number of engineering measurements were made to investigate the physical properties of the surface. Motor currents on the sampler arm, temperature on the lander, pictures of the footpads, etc., were used to deduce the physical nature of the landing site.

Radio Science

The communication systems were used to make measurements of the planet and its atmosphere, to locate the position of the lander on the surface, and to perform experiments in celestial mechanics. The available communication links were lander-to-Earth and orbiter-to-Earth (S-X band), and lander-to-orbiter (UHF) for relay.

ENTRY

During the period of descent to the surface, the ions and electrons of the upper atmosphere were measured using a retarding potential analyzer that is swept from +18 to -75v. At about 800,000 ft. above the surface, a mass spectrometer, mounted at the apex of the entry aeroshell, began to make measurements of the neutral species of gas in the mass range 1-50 amu. Data were obtained to develop a profile of the major and minor atmospheric constituents. Pressure, temperature, and acceleration were also measured as a function of altitude to complement the compositional data.

VIKING DATA

Attachment I is a list of Viking experiment data available or expected in the near future at the National Space Science Data Center (NSSDC), Code 601, NASA/Goddard Space Flight Center, Greenbelt, Maryland 20771. Additional information concerning variety, format and content, and cost of acquiring the data can be obtained by writing NSSDC.

A complete list of reports and publications generated by the Viking project and by the Viking principal investigators is available from NSSDC on microfiche.

PROGRAM MANAGEMENT

The Mars Data Analysis Program is managed by the Planetary Division, Code SL-4, NASA Headquarters, Washington, DC 20546. Mr. Joseph M. Boyce (202/755-3645) is designated as Program Scientist.

If you have questions regarding data availability, proposal format, evaluation procedures, etc., you should contact one of the following NASA Discipline Scientists by telephone or by writing to NASA Headquarters, Planetary Division, Code SL-4, Washington, DC 20546.

DISCIPLINE	SCIENTIST	TELEPHONE
Astronomy/Radio Sciences	Dr. William E. Brunk	202/755-3660
Atmospheres	Dr. Robert E. Murphy	202/755-3660
Planetary Biology and Organic Chemistry	Dr. Donald L. DeVincenzi	202/755-3732
Geology, Cartography and Image Processing	Mr. Joseph M. Boyce	202/755-3645
Geochemistry and Geophysics	Dr. William L. Quaide	202/755-1602
Interdisciplinary	Dr. Geoffrey A. Briggs	202/755-3730

Sincerely,

Thomas A. Mutch
Associate Administrator
for Space Science

Enclosures a/s

ATTACHMENT I

NATIONAL SPACE SCIENCE DATA CENTER(NSSDC)
LISTING OF VIKING EXPERIMENT DATA

The following table lists Viking experiment data that are currently available from NSSDC. The first column contains experiment and data set names. The second column lists the NSSDC ID number for the data sets from each mission. When requesting information or cost estimates, specify the NSSDC ID for the data you require. Data are also available from the Mariner 6, 7, and 9 missions. Contact NSSDC for further information.

NSSDC LISTING OF VIKING EXPERIMENT DATA

Experiment/Data Set	NSSDC ID Viking 1	Viking 2
ORBITER		
Infrared Thermal Mapping Reduced data on magnetic tape	75-075A-02A	75-083A-02A
Mars Atmosphere Water Detector Radiance and geometry data on magnetic tape	75-075A-03A	75-083A-03A
Orbiter Imaging		
SEDR support data on microfilm	75-075A-01E	75-083A-01G
Index by latitude, longitude, and 10 deg boxes on microfiche	75-075A-01I	75-083A-01H
Mosaic summary and index on microfiche	75-075A-01J	75-083A-01I
Index to Phobos, Deimos, and star images on microfiche	75-075A-01K	75-083A-01J
Rectilinear and orthographic index by roll and file number on microfiche	75-075A-01L	75-083A-01K
List of images by quadrangle, latitude, and longitude on microfilm	75-075A-01M	75-083A-01M
Mission picture catalog on microfiche	75-075A-01O	75-083A-01L
Black and white press release photography	75-075A-01A	75-083A-01A
Color press release photography	75-075A-01D	75-083A-01P
Rectilinear orbital photography	75-075A-01B	75-083A-01D
Orthographic orbital photography	75-075A-01C	75-083A-01E
Black and white mosaics	75-075A-01F	75-083A-01B
Stereo pair images	75-075A-01H	75-083A-01F
IPL processed black and white photography	75-075A-01N	75-083A-01N
IPL processed color photography	75-075A-01P	75-083A-01O
USGS color photomosaics	75-075A-01Q	
Radio Science		
381 MHz relay link on microfilm	75-075A-04A	75-083A-04A
Radio occultation data on magnetic tape	75-075A-04B	---
ENTRY SCIENCE		
Atmosphere Composition Experiment		
UAMS mass spectra plots on microfilm	75-075C-12A	75-083C-12A
UAMS ion currents on microfilm	75-075C-12B	75-083C-12B
RPA ion-electron data on magnetic tape	75-075C-14B	75-083C-14B
RPA ion-electron data on microfilm	75-075C-14C	75-083C-14C
Trajectory-attitude data on magnetic tape	75-075C-14A	75-083C-14A

Experiment/Data Set	NSSDC ID Viking 1	Viking 2
Atmosphere Structure Experiment		
Pressure, density, temperature profiles on microfilm	75-075C-02A	75-083C-02A
LANDER EXPERIMENTS		
Biology		
Gas exchange, labeled release, and pyrolytic release data on microfilm	75-075C-03F	75-083C-03F
Inorganic Analysis		
Command, spectra, and temperature history on magnetic tape	75-075C-13E	75-083C-13E
Spectral plots on microfiche	75-075C-13A	75-083C-13E
Lander Imaging		
Picture catalog of Primary Mission Experimenter Data Record on microfiche	75-075C-06E	75-083C-06E
Team Data Record-IPL Primary Mission catalog on microfiche	75-075C-06K	75-083C-06K
Catalog of Primary Mission Team Data Record color images on microfiche	75-075C-06L	75-083C-06L
High-resolution mosaic index and description on microfilm	75-075C-06M	75-083C-06M
Primary and Extended Mission catalog on microfiche	75-075C-06N	75-083C-06N
Experiment Data Record data on magnetic tape	75-075C-06O	75-083C-06O
Black and white press release photographs	75-075C-06A	75-083C-06A
Color press release photographs	75-075C-06B	75-083C-06B
Team Data Record black and white photography	75-075C-06C	75-083C-06C
Experiment Data Record black and white photography	75-075C-06D	75-083C-06D
Team Data Record color photography	75-075C-06F	75-083C-06F
High-resolution mosaics	75-075C-06H	75-083C-06H
Donut projection images	75-075C-06I	75-083C-06I
Multi-CE-label photography	75-075C-06J	75-083C-06J
Lander Radio Science		
Range and Doppler data on magnetic tape	75-075C-11B	75-083C-11B
Magnetic Properties		
Index of magnet images on microfiche	75-075C-10A	75-083C-10A
Magnet images on roll film	75-075C-10B	75-083C-10B

Experiment/Data Set	NSSDC ID Viking 1	Viking 2
Meteorology		
Printed pressure and wind temperature catalog on microfilm	75-075C-07G	75-083C-07G
SANMET temperature/wind vector vs time listing on microfilm	75-075C-07A	75-083C-07A
High time resolution wind/temperature plots on microfilm	75-075C-07B	75-083C-07B
Low time resolution wind/temperature plots on microfilm	75-075C-07C	75-083C-07C
Pressure data on magnetic tape	75-075C-07D	75-083C-07D
Wind/temperature data on magnetic tape	75-075C-07E	75-083C-07E
Daily plots of wind, temperature, and pressure on microfilm	75-075C-07F	75-083C-07F
Molecular Analysis		
GCMS soil analysis data on magnetic tape	75-075C-04A	75-083C-04A
GCMS soil analysis mass spectra on magnetic tape	75-075C-04B	75-083C-04B
Physical Properties		
Physical properties data in published reports	75-075C-01A	75-083C-01A
Seismology		
Seismic data program on magnetic tape	---	75-083C-08A
Experiment Data Record on magnetic tape	---	75-083C-08B
Seismogram reocrds for SOL 1-8 on microfilm	---	75-083C-08C

ATTACHMENT II

GUIDELINES FOR PARTICIPATION IN NASA's MARS DATA ANALYSIS PROGRAM

I. Purpose

These guidelines contain format and mailing information for submission of unsolicited proposals for research related to Mars Data Analysis Program. Although utilization of the proposal format is not required, it is believed that its use should simplify preparation and review of your proposal.

II. Proposal Content and Format

The content of the proposal should be in sufficient detail to enable a reviewer to make a judgment with respect to: (1) the relevance of the proposed research to the Mars Data Analysis Program, (2) the probabililty that the investigators will be able to accomplish the stated objectives within the requested resources, and (3) its overall merit.

a. Number and Size - Fifteen copies of each proposal and any appended material are required.

It is suggested that each proposal for new work be limited to not more than 10 single-spaced, typewritten pages. It is suggested that renewal proposals be limited to five (5) pages and should emphasize progress and accomplishments measured against plans contained in the initial proposal. Any new work that is planned, or work initially planned and not expected to be accomplished must be highlighted, discussed, and justified.

For both new and renewal proposals, it is suggested that the following material, assembled in the order given, be submitted if appropriate. Other pertinent information, such as publications, etc., should be included as attachments.

b. Proposal Submission Address - (U.S. proposals only). The external mailing label and the cover must read exactly as follows:

Joseph M. Boyce
NASA Headquarters
Code SL-4 (MDAP)
Washington, D.C. 20546

c. Cover Letter - Each proposal should be prefaced by a cover letter signed by an official authorized to commit the investigator's organization. The cover letter should refer to the Mars Data Analysis Program.

d. Title Page - The title page should contain the following:

1. A short descriptive title for the proposed investigation.

2. Name of the proposing organization(s).

3. Names, full addresses, telephone numbers, and affiliations of the principal investigator and all co-investigators.

4. Date of submission.

5. A brief statement regarding special needs or facilities.

e. Abstract Page - A brief statement of the objective of the proposed research, method of approach, and justification of the work.

f. Description of Proposed Research - A brief introduction, background, and justification should be included. The description should be a full statement of the research proposed, identifying and relating the key elements. Give attention to the nature and amount of experimental data to be collected; describe the methods or approaches to be used; as appropriate, discuss the advantages of the proposed approach over alternatives. Discuss the significance of the expected results.

g. Cost Plan (U.S. Proposals Only) - Separate budgets should be presented for each year. The proposal should be prepared according to the guidelines of the institution submitting the proposal and should include the following information:

1. Cost estimates for direct labor, including individual man-months and rates for the personnel involved.

2. Estimated costs for materials; itemize items over $1,000.

3. Travel Costs: itemize trips.

4. Overhead rates and costs.

5. Other costs, with explanation. (Include cost of data products. See Section II-I of this Attachment.)

6. Total cost of support being requested from NASA.

h. Attachments - Appropriate descriptions of available facilities, bibliographies, and such other materials as desired.

i. Data Requirements - It will be the responsibility of the investigator to acquire required data from the National Space Science Data Center, Code 601, NASA/Goddard Space Flight Center, Greenbelt, MD 20771. Phone (301) 344-7354 FTS 344-7354.

A Catalog of Viking Mission Data containing descriptions of all the data products listed in Attachment I is available. It can be obtained by writing NSSDC at the above address.

Modest requests for imaging and non-imaging data will be supplied free of charge. However, there will be a charge for large requests. Therefore, the proposer should ascertain data requirements, and if necessary, contact NSSDC for a cost estimate to be included in the proposal budget.

j. Image Processing - There is a limited amount of funds available for special order image processing at the Jet Propulsion Laboratory, Image Processing Laboratory. A description of image processing capability services is available upon request. Requests for the description of services and actual image processing work should be sent to Mr. Stephen E. Dwornik (address in the Program Management Section of this announcement). Your request should include a justification of why existing photographs or data products are not sufficient to perform your research.

k. Other Support - List by title, other NASA funded studies that you receive support from. Include the name of the NASA monitor, current funding level and a short description of the work.

l. Disclosure of Proposal Data - It is NASA's policy to use the technical data contained in proposals for evaluation purposes only. Where any of such technical data constitutes a trade secret under the law and the offeror, or his proposed subcontractor, desires to maintain trade secret rights in such technical data the following "Notice" must be affixed to the cover sheet of the proposal specifying therein the pages of the proposal which contain trade secrets to be restricted in accordance with the conditions of the "Notice." Thereafter, it is NASA policy to protect such noticed technical data as a trade secret. NASA assumes no liability for use or disclosure of any technical data to which the Notice has not been applied.

NOTICE

Data on pages of this proposal constitute a trade secret. It is furnished to the government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided however, in the event a contract is awarded on this proposal the government may obtain in the contract additional rights to use and disclose this data."

III. General Policy

All documents submitted as unsolicited proposals should meet the following criteria:

A. contains sufficient scientific, technical, and cost information to enable meanirgful evaluation;

B. has been approved by a responsible official of the originating or sponsoring organization or a person authorized to contractually obligate such an organization; and

C. does not merely offer to perform standard services or to provide "off-the-shelf" articles.

If the document does not meet these requirements, a comprehensive evaluation will not be made and the document will be considered and handled as correspondence.

IV. Proposals from non-U.S. Organizations

All non-U.S. proposals should be forwarded to:

International Affairs Division
Code LID-18 (MDAP)
NASA Headquarters
Washington, DC 20546

Proposals should be in English and should be endorsed by the official national agency of the proposer's country which is responsible for space and/or scientific activities. Should a proposal be selected, NASA will arrange with the sponsoring national agency for the proposed participation on a cooperative (no exchange of funds) basis, in which NASA and the foreign sponsoring agency will each bear the cost of discharging their respective responsibilities.

Data Availability

Requests for data products and data product availability information from U.S. investigators should be directed to:

National Space Science Data Center
Code 601
NASA/Goddard Space Flight
Greenbelt, MD 20771

Requests for data products and data product availability information from non-U.S. investigators should be directed to:

World Data Center A for Rockets and Satellites
Code 601
NASA/Goddard Space Flight Center
Greenbelt, MD 20771
U.S.A.

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Reply to Attn of: SL-4 (M. A. Mitz)

September 24, 1980

Dear Colleague:

We have received a number of inquiries from scientists who wish to respond as Co-investigators, with European Principal Investigators, to the "ESA Call for Proposals" for the Giotto Mission to Comet Halley. The purpose of this letter is to let you know what our current position is on this matter. In fact, this is an unprecedented situation for which neither a budget nor an established procedure exists. However, since we do encourage international cooperation through the participation of U.S. Co-investigators, the Planetary Division has submitted to the Office of Space Science for possible inclusion in NASA's FY 1982 budget request, a budget item to provide for such support. Until final action on the FY 1982 budget occurs, in the fall of 1981, we will not know if the support will be available.

Assuming resources are made available in FY 1982, we would adopt the following procedure: we will review, on a case-by-case basis, each experiment which has U.S. Co-investigators and which is selected by ESA. If we deem the investigation, and the proposed role of the investigator, to provide sufficient benefit to NASA, then we would attempt to provide resources to cover the activity of the U.S. investigator. Activities involving the provision of hardware would be considered on the same basis. In order to facilitate this process we would like to receive a courtesy copy (not a formal proposal to NASA) of each proposal submitted to ESA with U.S. Co-investigators. It would also be helpful if a U.S. contact were designated for each such experiment in a cover letter accompanying the NASA copy of the ESA proposal.

Sincerely yours,

A. Guastaferro
Director
Planetary Division
Office of Space Science

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